33270

COMPACT DISC PLAYER

DP-850

SERVICE MANUAL

KENWOOD

TRIO-KENWOOD CORPORATION

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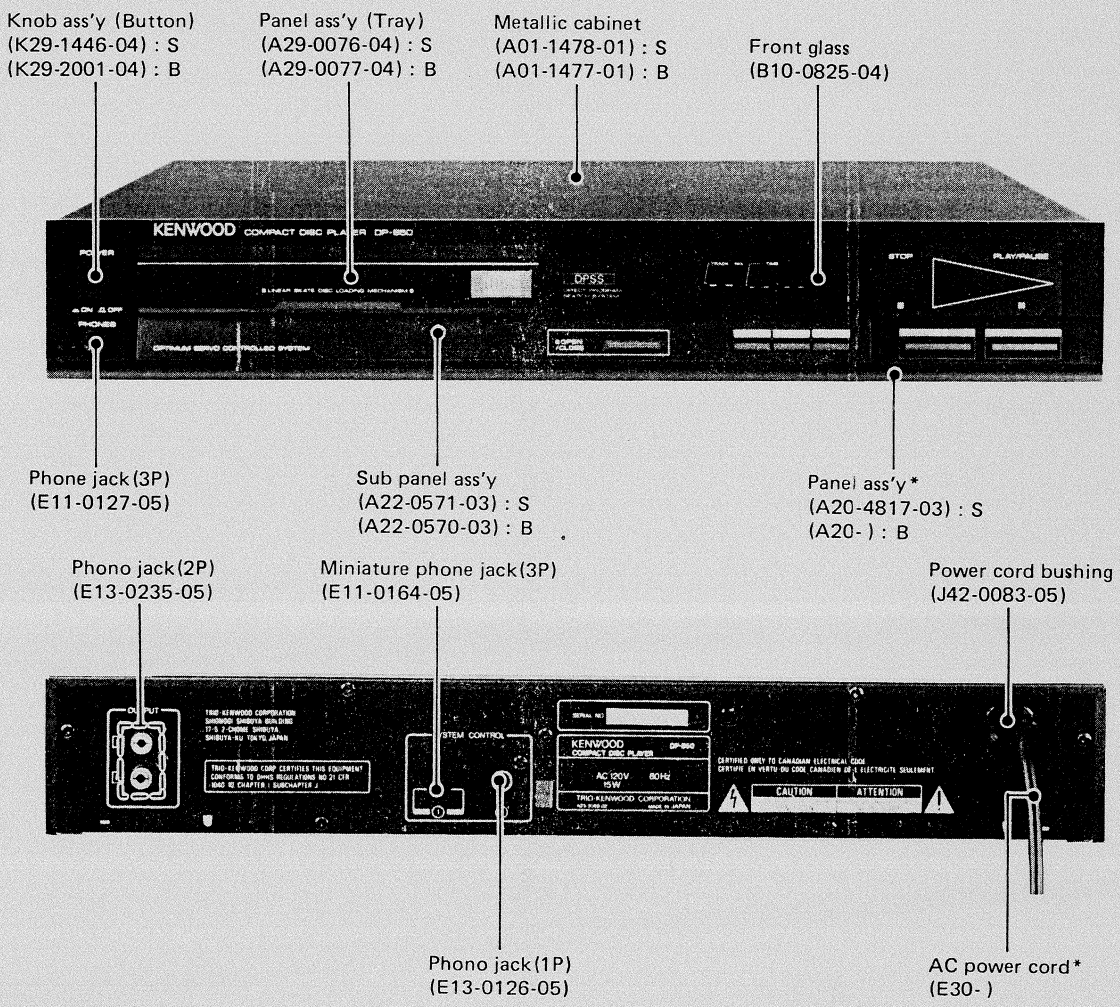


In complicance with Federal Regulations, following are reproductions of labels on, or inside the product relating to laser product safety.

TRIO-KENWOOD Corp. certifies this equipment conforms to DHHS Regulations No. 21 CFR 1040. 10, Chapter 1, Subchapter J.

DANGER : Laser radiation when open and interlock defeated.
AVOID DIRECT EXPOSURE TO BEAM.

***Refer to parts list on page 20.**
Photo is DP-850 (Black version).
S : Silver version.
B : Black version.

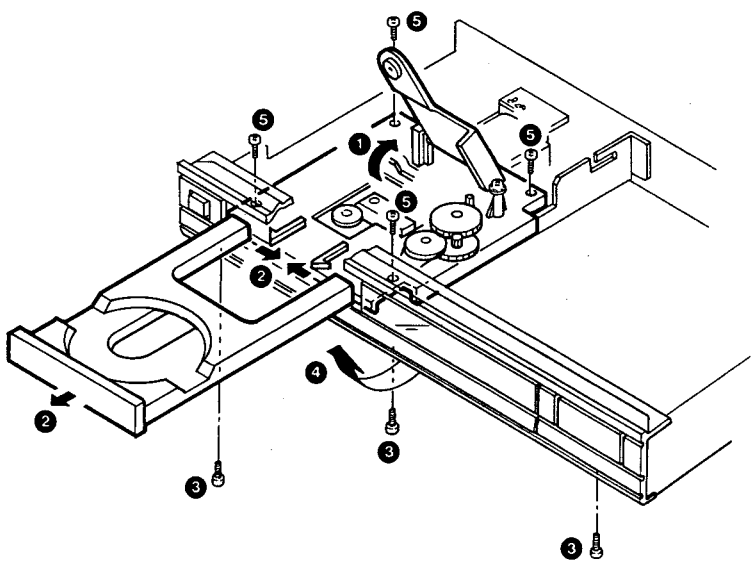
DISASSEMBLY FOR REPAIR

REMOVING THE FRONT PANEL

1. Turn the power off with the disc tray opened, then remove the top cover.
2. Lift up the disc clamper in the direction of arrow ❶. Then pull out the disc tray toward you while holding the tray stopper grips inside (❷).
3. Remove the three screws (❸). Pull out the lower side of the front panel toward you (❹). Now, the front panel is free from the grips of the sub-panel.

REMOVING THE PICKUP

4. Remove the disc tray, and the four screws (❺) retaining the mechanism ass'y (X92-1120-01).



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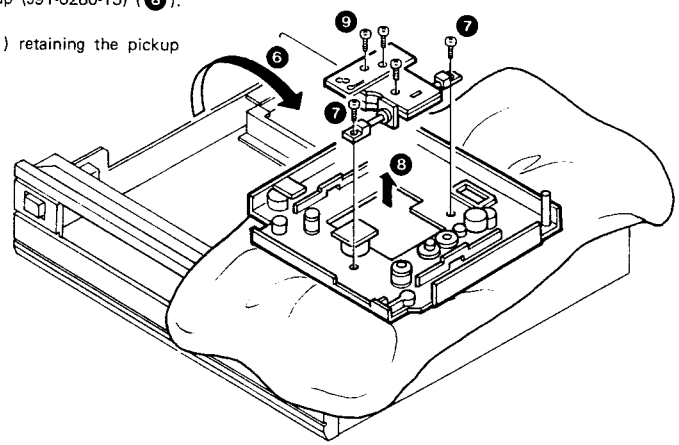
DISASSEMBLY FOR REPAIR

5. Turn the mechanism ass'y (X92-1120-01) over (❻), and remove the two rod shaft retaining screws (❼) to remove the rod shaft and pickup (J91-0280-15) (❽).
6. Remove the three screws (❾) retaining the pickup (J91-0280-15) and metal fitting.



7. Unsolder the LD pin of the pickup (J91-0280-15) (❿).
8. Unsolder the ALPC PC board and relay PC board (X29-1700-00 B/2) (⓫).

* **When removing the relay PC board, use the net wires (outer jacket of the shielded wire, etc.) dipped in flux for convenience.**

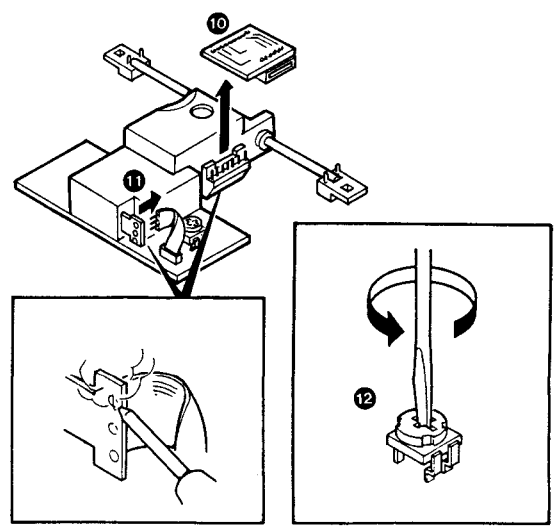
9. When installing the new pickup (J91-0280-15) for replacement, fully turn the trimming pot. (VR1) on the ALPC PC board (X29-1700-00 , A/2) counterclockwise. (⓬)

* **This is to prevent the over level from outputting.**

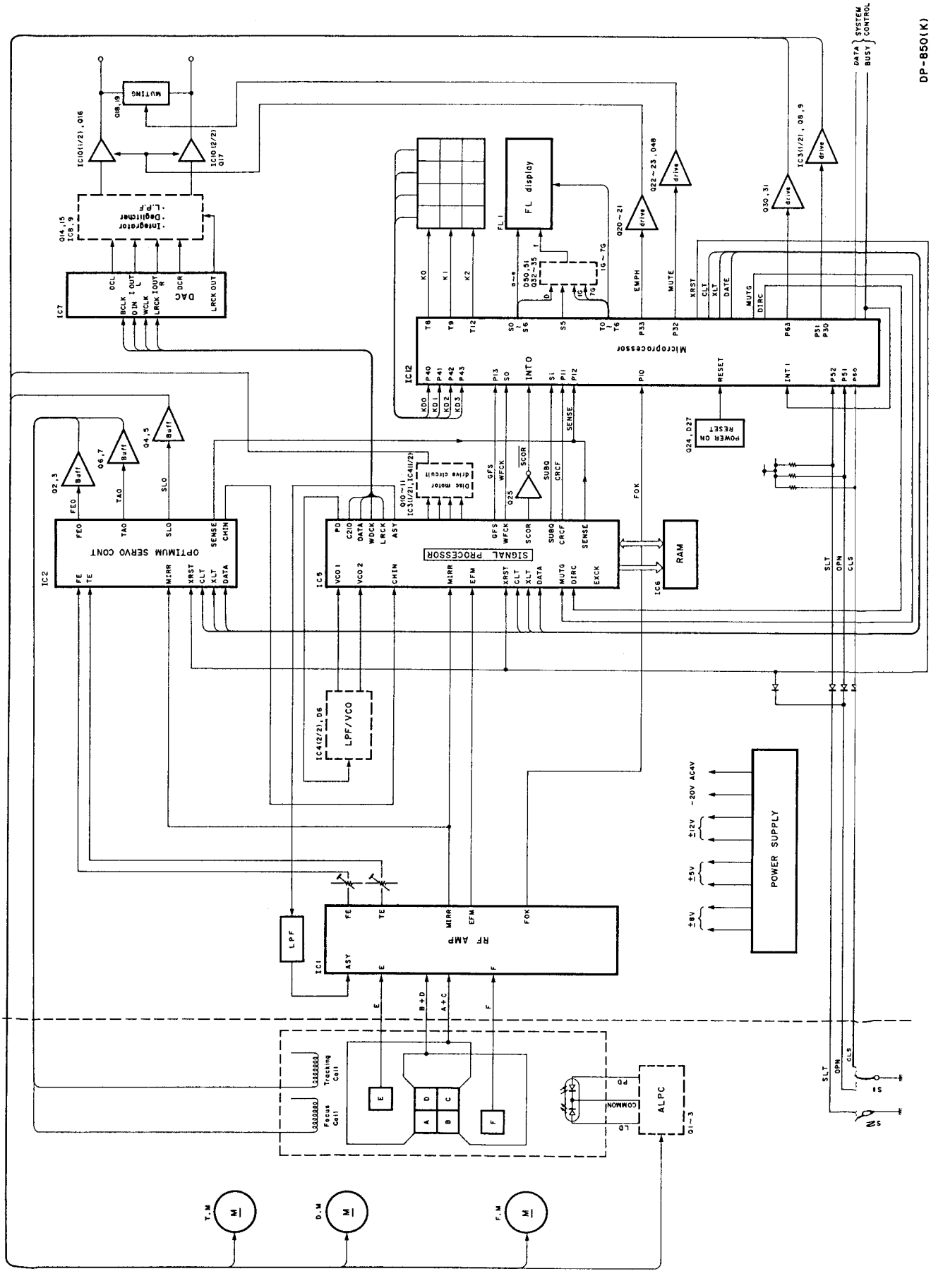
Note:

When handling the pickup (J91-0280-15) directly with your hand, be sure to discharge any static electric build-up as a preventive measure. (Operation table, body and soldering iron, etc.) Leave the laser diode (LD) short pin attached as long as possible or until immediately before operation.

Unless the above is performed, the life of the laser diode might be shortened, or may soon become defective.



BLOCK DIAGRAM



CIRCUIT DESCRIPTION

escription of components

LECTRIC (X25-2660-00)

Components	Application/Function	Operation/condition/compatibility
IC1	RF Amplifier	Amplify of laser pick-up output signal. Following function are contained. 1 Focus/tracking error detection 2 EFM comparator 3 MIRR signal detection
IC2	Optinum servo control	Focus/Tracking/Feed control
IC3 (1/2), Q10, Q11	Disc motor drive	——
IC3 (3/2), Q8, Q9	Tray motor drive	——
C4 (1/2, 2/2)	Amplifier	
IC5	Signal processor	Bit clock signal, EFM demodulation, Detection of Frame synchrozation, Error detection/ correction, CLV servo of disc motor
IC6	RAM	
IC7	D/A comparator	Control of D/A conversion
C8 (1/4,4/4)	Integrator	Integrator style D/A conversion
C8 (2/4,3/4)	Buffer	
IC9	Deglitcher	PAM conversion of D/A conversion output
IC10	Post amplifier	De-emphasis circuit, Aperture compensation circuit
IC11	Headphone amplifier	
IC12	Microprocessor	
IC13	+ 12V AVR	
IC14	−12V AVR	
Q1	Switch	MIRR signal line is horcibly changed to "H" level on the situation which FOK signal is "L" level. This prevents unnecessary radiation caused by the situation which EFM signal line goes to hunting because of noise.
Q2~Q11	Buffer	
Q12	FL drive	Drive of 7G
Q14,Q15	Discharge integrate capacitor	IC7 (DCL/DCR) controls discharge
Q16,Q17	De-emphasis switching	
Q18,Q19	Mute circuit	
Q20,Q21	De-emphasis signal drive	Logic level conversion of emphasis control signal
Q22,Q23	Mute signal drive	Logic level conversion of Mute control signal
Q24	Power ON reset	Reset at "H"
Q25	Inverter	Inversion of logic of signal SCOR
Q26,Q27	+ 8V AVR	
Q28,Q29	−8V AVR	
Q30,Q31	Laser power supply (+ 5V)	Controls POWER ON/OFF of laser power supply.
Q32~Q35	Interpolate display driver	

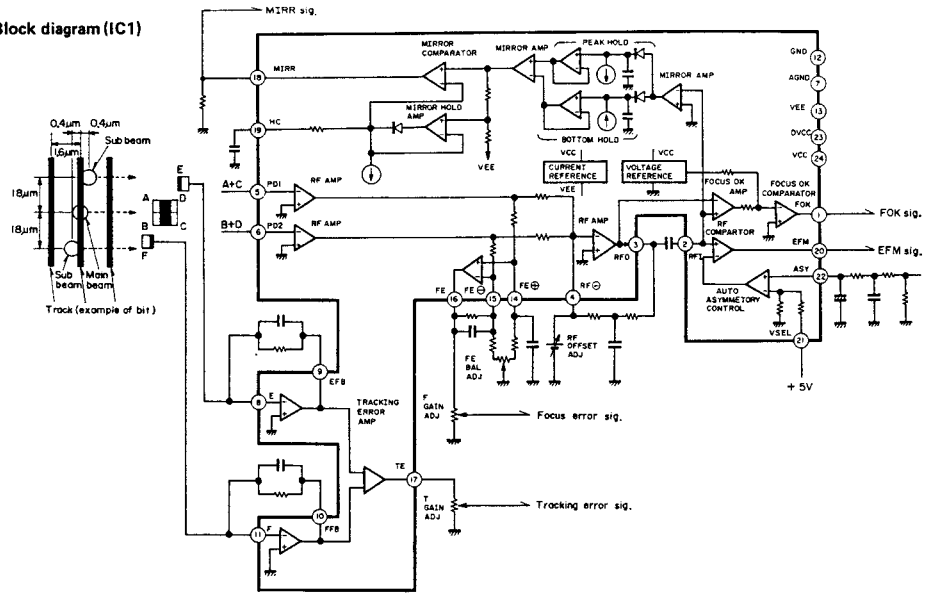
NTROL CIRCUIT (X29-1700-00)

omponents	Application/function	Operation/condition/compatibility
Q1~Q3	Laser diode power Adj.	——

CIRCUIT DESCRIPTION

CX20109 (IC1)

Block diagram (IC1)



Explanation of terminals (IC1)

Terminal No.	Name	I/O	Explanation
1	FOK	O	Focus servo permission output. Active at "H". Load resistor connected (PNP open collector).
2	RFI	I	RF summing amp output is input via coupling C.
3	RFO	O	RF summing amp output. (EYE pattern test point.)
4	RF ⊖	I	RF summing amp inverted input. CR connected to pins ③ – ④ as feedback route.
5	PD1	I	RF I–V amp (1) inverted input. Connected to PIN diode B + D. Current input.
6	PD2	I	RF I–V amp (2) inverted input. Connected to PIN diode E. Current input.
7	AGND	–	Small signal analog system GND.
8	E	I	E I–V amp inverted input. Connected o PIN diode E. Current input.
9	EFB	O	E I–V amp output. CR connected to pins ⑧ – ⑨ as feedback route.
10	FFB	O	F I–V amp inverted output. CR connected to pins ⑩ – ⑪ as feedback route.
11	F	I	F I–V amp inverted input. Connected to PIN diode F. Current input.
12	GND	–	GND
13	VEE	–	Negative power supply.
14	FE ⊕	I	Focus error amp non-inverted input. Connected to low pass CR.
15	FE ⊖	I	Focus error amp inverted input.
16	FE	O	Focus error amp output. CR connected, to pins ⑮ – ⑯ as feedback route.
17	TE	O	Tracking error amp output.
18	MIRR	O	Mirror output (active at "H"). Load resistor connected (PNP open collector.)
19	HC	I	Mirror hold capacitor connected.
20	EFM	O	EFM output comparator output.
21	VSEL	I	Setting pin of reference input level for auto asymmetry control amp. Vcc for ±5V power supply, GND for + 10V power supply.
22	ASY	I	Auto asymmetry control input. RF signal is sliced and square wave is made by this.
23	DVcc	–	EFM comparator system positive power supply.
24	Vcc	–	Positive power supply.

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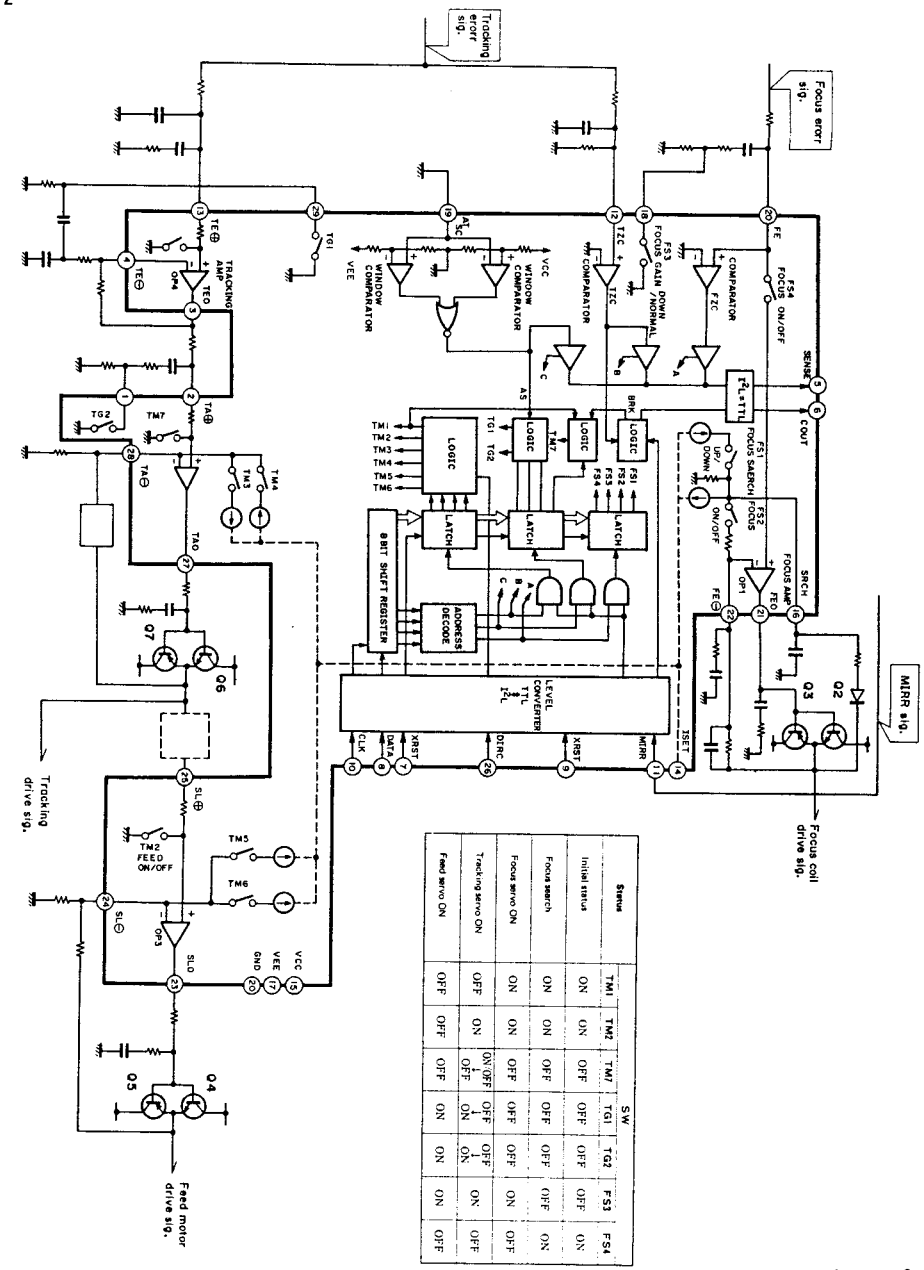
CIRCUIT DESCRIPTION

CX20108 (IC2)

Block diagram (IC2)



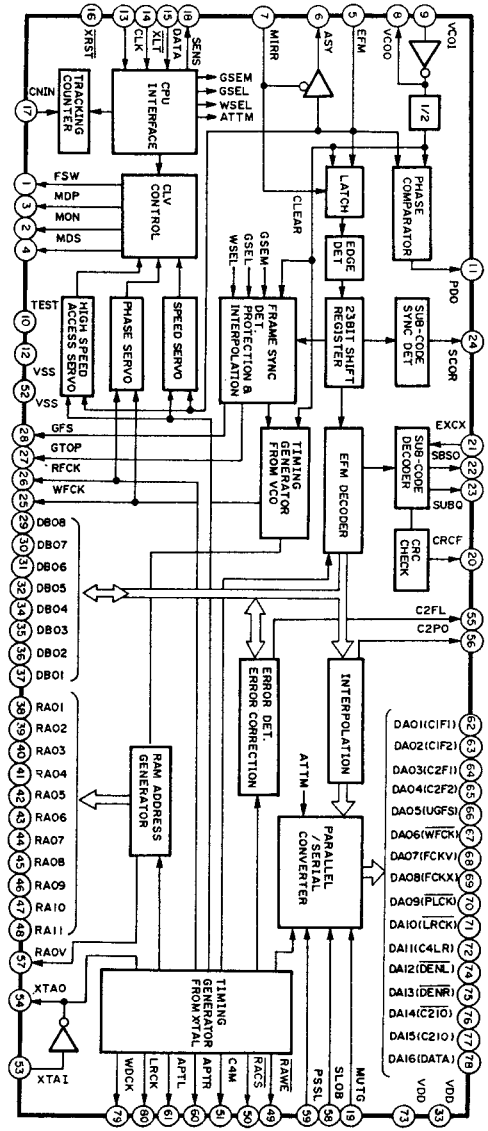
Status	TM1	TM2	TM7	TG1	TG2	FS3	FS4
Initial status	ON	ON	OFF	OFF	OFF	OFF	ON
Focus search	ON	ON	OFF	OFF	OFF	OFF	–
Focus servo ON	ON	ON	OFF	OFF	OFF	ON	OFF
Tracking servo ON	OFF	ON	ON/OFF	OFF	OFF	ON	OFF
Feed servo ON	OFF	OFF	ON/OFF	ON	ON	ON	OFF

SW

CIRCUIT DESCRIPTION

Explanation of terminals (IC2)

Terminal No.	Name	I/O	Explanation
1	TG2	O	Tracking amp gain switching pin. Becomes open or GND level.
2	TA ⊕	I	Op amp 2 non-inverted input.
3	TE0	O	Op amp 4 output.
4	TE ⊖	I	Op amp 4 inverted input.
5	SENSE	O	IC internal state output. relative to DATA address. (Changes by internal serial register address.)
6	C OUT	O	Track number count signal output during high speed access.
7	$\overline{XRST}$	I	Performs all clear for internal register at "L".
8	DATA	I	Serial data input from CPU. Input from LSB. D0–D7.
9	$\overline{XLT}$	I	Latch input from microprocessor. Ltaches shift register data to each register.
10	CLK	I	Serial data transmission clock input. Reads in data at falling edge.
11	MIRR	I	Mirror signal input from RF amp.
12	TZC	I	Tracking zero cross. Tracking error signal input via coupling C. Time constant determined by 1 track jump, but normally around 2kHz.
13	TE ⊕	I	Tracking error signal input.
14	ISET		Bias current setting to determine focus search voltage, tracking jump voltage and feed voltage.
15	Vcc		Power supply pin. Normally + 5V.
16	SRCH		Connected to capacitor which determines time constant, for focus search charge/discharge waveform.
17	VEE		Power supply pin. Normally −5V.
18	FS3	I	Focus amp gain switching pin. Becomes open or GND level.
19	ATSC	I	Not used this function. Should be grounded.
20	FE	I	Focus error signal input.
21	FE0	O	Op amp 1 output.
22	FE ⊖	I	Op amp 1 inverted input.
23	SL0	O	Op amp 3 output.
24	SL ⊖	I	Op amp 3 inverted input.
25	SL ⊕	I	Op amp 3 non-inverted input.
26	$\overline{DIRC}$	I	Used for 1 track jump. Normally "H". Reverse track jump pulse direction at "L". Making "H" next sets normal tracking mode. Made "L" for a set time by TZC rising and falling edges detection.
27	TA0	O	Op amp 2 output.
28	TA ⊖	O	Op amp 2 inverted output.
29	TG1		Tracking amp gain switching pin. Becomes open or GND level.
30	GND		IC ground pin.



Block diagram (IC5)

CX23035 (IC5)

CIRCUIT DESCRIPTION

CIRCUIT DESCRIPTION

Explanation of terminals (IC5)

Terminal No.	Name	I/O	Explanation
1	FSW	O	Switches filter time constant.
2	MON	O	Disc motor ON/OFF control output.
3	MDP	O	Disc motor drive output. Rough control during CLV-S mode and phase control during CLV-P mode.
4	MDS	O	Disc motor drive output. Speed control during CLV-P mode.
5	EFM	I	EFM signal input from RF amp.
6	ASY	O	Output to control EFM signal slice level.
7	MIRR	I	MIRROR input from RF amp.
8	VCOO	O	VCO output. f = 8.6436MHz when locked to EFM signal.
9	VCOI	I	VCO input.
10	TEST	I	(0V)
11	PD0	O	Phase comparison ouput in EFM-PLL.
12	Vss	–	GND (0V)
13	CLK	I	Serial data transmission clock input. Latches data at clock rising edge.
14	$\overline{XLT}$	I	Latch input from microprocessor. Latches shift register data (serial data from microprocessor) to each register.
15	DATA	I	Serial data input from microprocessor.
16	$\overline{XRST}$	I	System reset input. Reset at "L".
17	CNIN	I	Tracking pulse input.
18	SENS	O	Outputs internal state corresponding to address.
19	MUTG	I	Muting input. When ATTM in internal register is "L" and MUTG is "H", muting is done.
20	CRCF	O	Outputs SUB-Q CRC results.
21	EXCK	I	Clock input for SUB-Q serial output.
22	SBSO	O	Serial SUB-Q output.
23	SUBQ	O	SUB-Q output.
24	SCOR	O	SUB-Q S0 + S1 output.
25	WFCK	O	Write Frame clock output. f = 7.35kHz when frame sync. is locked.
26	RFCK	O	Read frame clock output. 7.35kHz from system clock generator.
27	GTOP	O	Status output for frame sync. protection state.
28	GFS	O	Status output for frame sync. lock state.
29	DB08	I/O	External RAM data pin. DATA8 (MSB)
30	DB07	I/O	External RAM data pin. DATA7
31	DB06	I/O	External RAM data pin. DATA6
32	DB05	I/O	External RAM data pin. DATA5
33	VDD	–	Power supply (+ 5V)
34	DB04	I/O	External RAM data pin. DATA4
35	DB03	I/O	External RAM data pin. DATA3
36	DB02	I/O	External RAM data pin. DATA2
37	DB01	I/O	External RAM data pin. DATA1 (LSB)
38	RA01	O	External RAM address output. ADDR01 (LSB)
39	RA02	O	External RAM address output. ADDR02
40	RA03	O	External RAM address output. ADDR03
41	RA04	O	External RAM address output. ADDR04
42	RA05	O	External RAM address output. ADDR05
43	RA06	O	External RAM address ouptut. ADDR06
44	RA07	O	External RAM address output. ADDR07
45	RA08	O	External RAM address output. ADDR08
46	RA09	O	External RAM address output. ADDR09
47	RA10	O	External RAM address output. ADDR10
48	RA11	O	External RAM address output. ADDR11 (MSB)
49	$\overline{RAWE}$	O	Write enable signal output to external RAM. (active at "L".)
50	$\overline{RACS}$	O	Chip select signal output to external RAM. (active at "L".)
51	C4M	O	1/2 X'tal frequency output. f = 4.2336MHz.

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CIRCUIT DESCRIPTION

Terminal No.	Name	I/O	Explanation
52	Vss	–	GND (0V)
53	XTAL	I	X'tal oscillation circuit input. f = 8.4672MHz
54	XTAO	O	X'tal oscillation circuit output. f = 8.4672MHz
55	C2FL	)	Correction state output. Goes "H" when C2 error corrector cannot correct.
56	C2P0	O	C2 pointer status output. Synchronized to audio data output.
57	RAOV	O	Overflow and underflow status output for ±4 frame jitter absorption RAM.
58	SLOB	I	Audio data output code switching input. 2's complement output at "L", offset binary output at "H".
59	PSSL	I	Audio data output mode switching input. Serial output at "L", parallel output at "H".
60	APTR	O	Aperture correction control output. "H" during Rch.
61	APTL	O	Aperture correction control output. "H" during L ch.
62	DA01	O	DA01 (parallel audio data LSB) output when PSSL = "H". C1F1 output when PSSL = "L".
63	DA02	O	DA02 output when PSSL = "H". C1F2 output when PSSL = "L".
64	DA03	O	DA03 output when PSSL = "H". C2F1 output when PSSL = "L".
65	DA04	O	DA04 output when PSSL = "H". C2F2 output when PSSL = "L".
66	DA05	O	DA05 output when PSSL = "H". UFGS output when PSSL = "L".
67	DA06	O	DA06 output when PSSL = "H". $\overline{WFCK}$ output when PSSL = "L".
68	DA07	O	DA07 output when PSSL = "H". FCKV output when PSSL = "L".
69	DA08	O	DA08 output when PSSL = "H". FCKX output when PSSL = "L".
70	DA09	O	DA09 output when PSSL = "H". $\overline{PLCK}$ output when PSSL = "L".
71	DA10	O	DA10 output when PSSL = "H", $\overline{LRCK}$ output when PSSL = "L".
72	DA11	O	DA11 output when PSSL = "H". C4LR output when PSSL = "L".
73	VDD	–	Power supply (+ 5V).
74	DA12	O	DA12 output when PSSL = "H". $\overline{DENL}$ output when PSSL = "L".
75	DA13	O	DA13 output when PSSL = "H". $\overline{DENR}$ output when PSSL = "L".
76	DA14	O	DA14 output when PSSL = "H". $\overline{C210}$ BCLK inverted output when PSSL = "L".
77	DA15	O	DA15 output when PSSL = "H". C210 Bit clock signal output (BCLK) when PSSL = "L".
78	DA16	O	DA16 (parallel audio data MSB) output when PSSL = "H". DATA output when PSSL = "L".
79	WDCK	O	Word clock signal output (88.2kHz).
80	LRCK	O	L/R ch separation signal (44.1kHz).

Note :

C1F1, C1F2 : Error correction state monitor output for C1 decording.
C2F1, C2F2 : Error correction state monitor output for C2 decording.
UGFS : Output of unprotected frame sync. pattern.
$\overline{WFCK}$: WFCK inverted output.
FCKV : WFCK/4 or WFCK/8 output.
FCKX : RFCK/4 or RFCK/8 output.
$\overline{PLCK}$: VCO/2 output. f = 4.3218MHz when locked to EFM signal.
C4LR : 176.4kHz strobe signal.
$\overline{DENL}$: L ch serial data enable signal.
$\overline{DENR}$: R ch serial data enable signal.
$\overline{C210}$: C210 inverted output (BCLR).
C210 : Bit clock output (BCLK). f = 2.1168MHz.
DATA : Audio signal serial data output.

CIRCUIT DESCRIPTION

Function of supplement (IC5)

a) Bit clock reproduction by EFM-PLL circuit

The EFM signal read out from the optical pick-up contains a 2.16MHz clock component, so the EFM-PLL circuit can extract a 4.32MHz bit clock (PLCK) which is in sync. with this clock.

At every edge of the EFM signal, the phase inversion with the PLCK, which is 1/2 VCO, is performed, and output is TRI-STATE from PDO pin. When in sync, the PDO pin average value is about 1/2·VDD. But when VCO is higher, the average value drops, and increases when it is lower.

b) EFM Demodulation

14 bit data is extracted from the 23 bit shift register and demodulated to 8 bit data through the 14 to 8 conversion circuit composed of a logic array. After this, a write-in request (WREQ signal) is output to the RAM interface block, and the data is output to the RAM data bus (DB08~DB01 pins).

c) Subcode demodulation

The 14 bit subcode sync. signals S0 and S1, from the 23 bit shift register, are detected and sampled at timing synchronized to WFCK. After delaying S0 one frame, S0 + S1 (ORed) is output from SCOR pin, and S0, S1 are output from SBSO pin (only when SCOR = "H".)

After the subcode data (P–W) is EFM demodulated, the data is input to the register at timing synchronized to WFCK, and subcode Q is output from SUBQ pin. Then, subcode data (P–W) is loaded to the 8 bit shift register, and output from SBSO pin according to the EXCK pin clock.

d) Subcode Q error detection

Subcode Q CRC (cyclic redundancy check) results are output from CRCF pin in sync. with SCOR pin. When error is detected, CRCF pin output goes low.

e) Jitter Margin

EFM demodulated data is synchrnonized with PLL in data playback section. Therefore, it includes disc rotation servo, etc. disturbances (wow, flutter, etc.). This data is written into the external RAM. The data read from the RAM is synchrronized to the clock from X'tal, so this means that the RAM is doing time axis correction.

However, the limits of time axis correction are determined by RAM capacity. On this system, when read/write frames are ±5 frames apart, other data is destroyed. Under those conditions, the playback sound cannot be guaranteed. There is a base counter monitor to avoid this problem.

In other words, when READ/WRITE base counter difference goes over ±4 frames, the READ base counter value is set in the WRITE base counter. The result is that non-corrected error data in the RAM is not output to D/A section.

The RA0V signal outputs "H" for 1 frame (WFCK) interval when the base counter difference goes over ±4 frames.

f) Error monitor

When PSSL pin is made low, signals which can monitor error correction are output. There are C1F1, C1F2, C2F1 and C2F2, output to DA01~DA04 for min. 472ns after RFCK falling edge. The levels and meanings of these signals are shown below.

C1F1	C1F2	C1 correction state
0	0	No error
1	0	1 error correction
0	1	Double error correction
1	1	Correction not enabled

C2F1	C2F2	C2FL	C2 correction state
0	0	0	No error
1	0	0	1 error correction
0	1	0	Double error correction
1	1	1	Correction not enabled.

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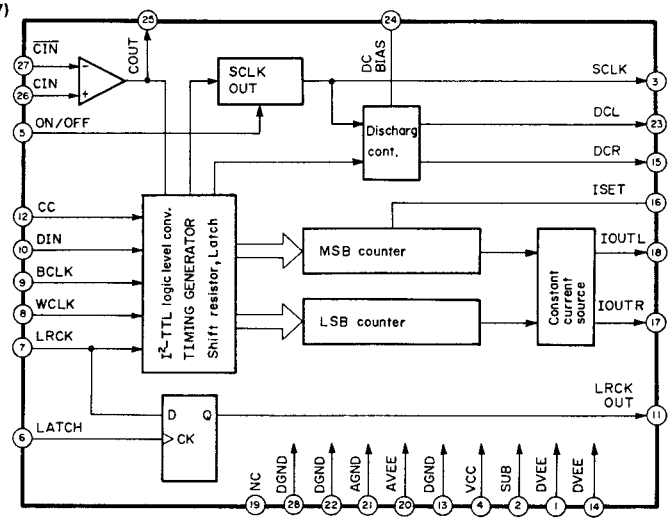
CIRCUIT DESCRIPTION

CX20152 (IC7)

Block diagram (IC7)

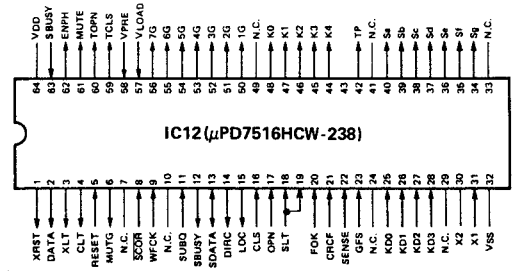


Explanation of terminals (IC7)

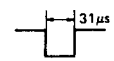
Terminal No.	Name	I/O	Explanation
1	DVEE	–	Negative power supply to digital system.
2	SUB	–	SUB STATE, common voltage with DVEE.
3	SCLK		Not used.
4	Vcc	–	Power supply.
5	ON/OFF		Not used
6	LATCH	I	Synchronous signal input for deglitcher control.
7	LRCK	I	L/R ch separation signal input. "L" : Rch, "H" : Lch
8	WCLK	I	Word clock input from digital signal processor. (88.2kHz)
9	BCLK	I	Bit clock input from digital signal processor. (C210, 2.16MHz)
10	DIN	I	Serial data input from digital signal processor. Input from MSB.
11	LRCK OUT	O	Deglitcher control signal.
12	CC	I	D/A conversion command input. Active "L".
13	DGND	–	Digital system GND.
14	DVEE	–	Negative power supply to digital system.
15	DCR	O	Discharge control signal to Rch integrator.
16	ISET	–	Bias current setting of constant current source.
17	IOUTR	I	Rch, constant current source output.
18	IOUTL	I	Lch, constant current source output
19	NC		
20	AVEE	–	Negative power supply to Analog system.
21	AGND	–	Small signal analog system GND.
22	DGND	–	Digital system GND.
23	DCL	O	Discharge control signal to Lch integrator.
24	DC BIAS	–	Bias input to discharge control output.
25	COUT	O	Clock buffer out.
26	CIN	I	Clock buffer non-inverted input.
27	$\overline{CIN}$	I	Block buffer inverted input.
28	DGND	–	Digital system GND.

CIRCUIT DESCRIPTION

μPD7516HCW-238 (IC12)



Explanation of terminals (IC12)

Terminal No.	Name	I/O	Explanation
1	XRST	O	RESET signal for CX23035 and CX20108 
2	DATA	O	Control data signal to CX23035 and CX20108
3	XLT	O	Control data latch signal to CX23035 and CX20108
4	CLT	O	Control data clock signal to CX23035 and CX20108
5	RESET	I	RESET signal
6	MUTG	O	Digital muting signal
8	$\overline{SCOR}$	I	Q data synchronizing signal interruption
9	WFCK	I	Write frame clock signal input
11	SUBQ	I	Q data signal
12	S BUSY	O	Synchronizing BUSY signal
13	S DATA	I/O	Synchronizing DATA signal
14	DIRC	O	Control signal to CX20108 (used at the time of tracking kick)
15	LDC	O	Laser POWER ON signal ("L" : Laser ON)
16	CLS	I	Tray CLOSE signal ("L" : Tray CLOSE)
17	OPN	I	Tray OPEN signal ("L" : Tray OPEN)
18,19	STL	I	PU's innermost position detect signal ("L" : Innermost position)
20	FOK	I	Focus OK signal ("H" : Focus OK)
21	CRCF	I	Q data CRC OK signal ("H" : CRC OK)
22	SENSE	I	SENSE signal from CX23035 and CX20108.
23	GFS	I	EFM synchronizing OK signal from CX23035. When GFS : "H" occurs in the tracking servo ON status, it indicates that EFM is normally read with CX23035.
25~28	KD0~KD3	I	Key data signal
30	X2		Clock oscillation crystal connect terminal (oscillation frequency 6.144MHz)
31	X1		
32	Vss		GND
34~40	Sg~Sa	O	Fluorescent display tube segment signal
42	TP	O	Test mode start signal
44~48	K4~K0	O	Key matrix signal
50~56	1G~7G	O	Fluorescent display tube grid signal
57	VLOAD		Power supply for fluorescent display tube (−30V)
58	VPRE		Power supply for fluorescent display tube (−5V)
59	TCLS	O	Tray CLOSE signal
60	TOPN	O	Tray OPEN signal
61	MUTE	O	Muting signal
62	ENPH	O	Emphasis signal
63	S BUSY	I	Synchronizing BUSY signal
64	VDD		Power supply (+ 5V)

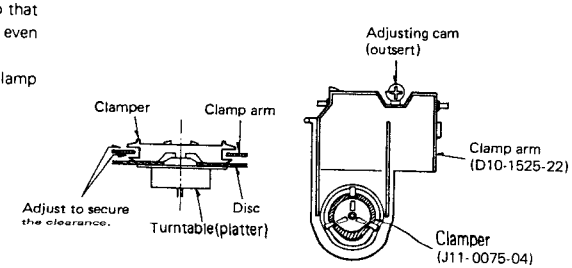
ADJUSTMENT

No.	ITEM	INPUT SETTINGS	OUTPUT SETTINGS	PLAYER SETTINGS	ALIGNMENT POINTS	ALIGN FOR	FIG.
1	LASER POWER	–	Apply the sensor of the Laser power meter into the pickup lens.	(X25-2660-00) Short-circuit TP16 and 17.	VR1 (X29-1700-00) (A/2) The ALPC circuit's VR installed on the pickup	0.3mW	
2	LASER OPERATION CURRENT CHECK (only when pickup appears to malfunction)	–	(X25-2660-00) Remove CN2 pin 3 and connect the DC current meter.	Short-circuit TP16 and 17.	–	5.5mA+Current value printed on the laser pickup.(However,the pickup having more than 40mA exceeding to the above value is defective.)	(a)
3	FOCUS ERROR BALANCE	–	(X25-2660-00) oscilloscope TP8(RF).	Test disc PLAY	(X25-2660-00) VR2	Best eye pattern	(b)
4	TRACKING ERROR BALANCE	–	(X25-2660-00) oscilloscope or DC voltmeter to TP11(TE).	In the test mode, press the M-READ key so that the tracking servo is set off.	(X25-2660-00) VR1 Tracking Error Balance	The upper and lower sides or should be symmetrical. DC=0±0.05V should be obtained.	(c)
5	FOCUS GAIN	(X25-2660-00) Apply 1kHz, 0.5Vrms signal to CN3 pin 2.	(X25-2660-00) Connect a 47kΩ, 470PF LPF to CN3 pin 1, then connect an oscilloscope or AC voltmeter.	Test disc PLAY	(X25-2660-00) VR3 FOCUS GAIN	50mVrms It's 1/10 of input voltage. (When the oscilloscope is used check the 1kHz signal component only.)	(d)
6	TRACKING GAIN	(X25-2660-00) Apply 1kHz, 0.5Vrms signal to CN3 pin 4.	(X25-2660-00) Connect a 47kΩ, 470PF LPF to pin 5, then connect an oscilloscope or AC voltmeter.	Test disc PLAY	(X25-2660-00) VR4 TRACKING GAIN	50mVrms It's 1/10 of input voltage. (When the oscilloscope is used check the 1kHz signal component only.)	(d)
7	RF OFFFSET	–	(X25-2660-00) Connect an oscilloscope or tester to TP8(RF).	Test disc PLAY	(X25-2660-00) VR5 RF OFFFSET	DC=1.0±0.1V	(e)
8	PLL	–	(X25-2660-00) Connect a frequency counter to TP15(PLCK).	STOP	(X25-2660-00) L1 F.ADJ	Adjust the frequency so that the 4.23MHz is obtained.	(f)
9	CLAMPER HEIGHT	–	–	STOP	adjusting cam.	Refer to Height Adjustment of Clamp Arm.	

HEIGHT ADJUSTMENT OF CLAMP ARM (D10-1525-22)

As shown in the figure, adjust the adjusting cam so that the clamp arm does not contact with the clamper, even when the disc is loaded or not.

(Tuning the adjusting cam clockwise lowers the clamp arm.)



ADJUSTMENT

TEST MODE OPERATION

This function is provided to adjust/check the optical system servo control circuits efficiently.

When a disc is played in ordinary, all servo control circuits (focus, tracking, feed and CLV servo control circuits) function as follows :

Focus servo circuit functions so that the laser beam focus is spotted on the disc surface. For this control, objective lens inside pickup actuactor moves in vertical direction to disc surface.

The tracking servo circuit functions so that laser beam spot always traces the signal track (– pit) on disc surface. For this control, objective lens moves in horizontal direction to disc surface.

The feed servo circuit functions to move the pickup when the regulations of the tracking servo circuit exceeds the transition. The pickup movement is controlled so that the laser beam spot always traces the signal track within the tracking servo control regulation range.

The CLV servo circuit samples the clock signal components from the EFM signal, and controls so that the rotation speed of the disc motor is kept at the constant linear velocity.

As a result of the tracking servo control operation, the focus lag of the laser beam has been newly made up. This focus lag is also compensated by the focus servo control circuits.

When the tracking servo regulations is increased, the feed servo circuit starts operating, and resulting in the tracking/focus operations again.

As described above, the operations of all optical system control circuits are related with each other.

When activating the test mode function, only the partial servo control circuits are operated, and the special operations are engaged. Set the special condition using control (operation) keys on the front panel as shown in Table below.

Short-circuit the TP18 and TP19 of the audio unit (X25-2660-00) and turn the power ON; the CD player enters the test mode operations.

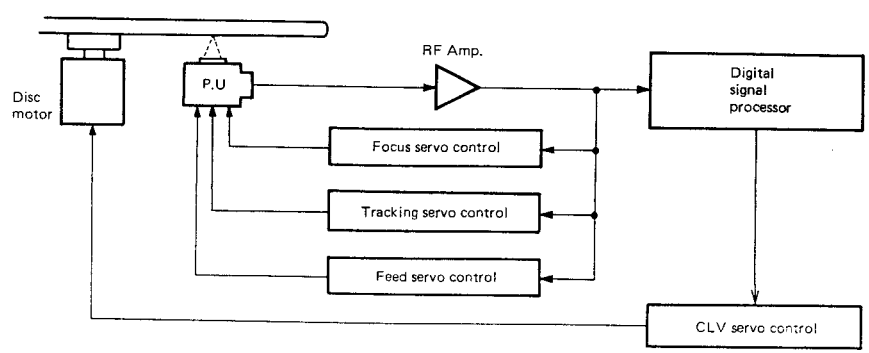
To release this mode, open the disc tray by pressing the OPEN/CLOSE button.

Table : Function of test mode

	Test mode name	Operation	Each control state					Key operation
			Focus	Tracking	Feed	Disc motor	LD ON/OFF	
1	Focus ON	To turn on Focus servo.	working	OFF	OFF	working	ON	Keying M-READ
2	Tracking ON	To turn on Tracking servo.	working	working	OFF	working	ON	Keying SEARCH
3	FEED ON	To turn on Feed servo.	working	working	working	working	ON	Keying PLAY/PAUSE
4	STOP	To turn off focus, tracking and feed.	OFF	OFF	OFF	hold	OFF	Keying STOP

	Test mode name	On STOP state	On FEED ON state	Key operation
5	UP	To move PU in FWD direction for 100ms.	To kick 3 tracks in FWD direction.	Keying
6	DOWN	To move PU in BACK direction for 100ms.	To kick 3 tracks in BACK direction.	Keying

	Test mode name	Operation	Key operation
7	OPEN/CLOSE	To OPEN/CLOSE the tray. Release the TEST MODE and perform the NORMAL MODE.	Keying OPEN/CLOSE



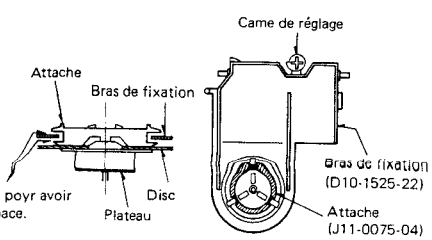
REGLAGE

N°	ITEM	REGLAGE DE L'ENTREE	REGLAGE DE LA SORTIE	REGLAGE DE LA LECTURE	POINT DE L'ALIGNEMENT	ALIGNER POUR	FIG.
1	ALIMENTATION LASER	–	Appliquer le détecteur du compteur depuissance optique sur la lentille du capteur.	(X25-2660-00) Court-circuiter TP18 et 17.	(X29-1700-00) (A/2) VR1 VR du circuit ALPC installé sur le capteur	0,3mW	
2	VERIFICATION DE TENSION DE FONCTIONNEMENT DU LASER (seulement si le capteur semble mal fonctionner)	–	(X25-2660-00) Enlever la broche 3 de CN2 et connecter l'ampèremètre CC.	Court-circuiter TP18 et 17.	–	Valeur de courant imprimé sur le capteur laser: +5,5mA(Cependant,un capteur ayant plus de 40mA excédant la valeur ci-dessus est défectueux.)	(a)
3	EQUILIBRE D'ERREUR DE FOCALISATION	–	(X25-2660-00) Connecter un oscilloscope à TP8(RF).	Disque test PLAY	(X25-2660-00) VR2	Meilleur motif à l'oeil.	(b)
4	EQUILIBRE D'ERREUR D'ALIGNEMENT	–	(X25-2660-00) connecter un oscilloscope ou un voltmètre CC à TP11(TE).	En mode de test, presser la touche de lecture de mémoire(M-READ) de manière à ce que l'assurervissement de l'alignement soit mis à l'arrêt.	(X25-2660-00) VR1 de balance d'erreuer d'alignement.	Les côtés le plus haut et le plus bas doivent être symétriques. Ou, CC=0±0,05 doit être obtenu.	(c)
5	GAIN DE FOCALISATION	(X25-2660-00) Envoyer un signal de 1kHz, 0,5Vrms à la broche 2 de CN3.	(X25-2660-00) Connecter un LPF de 47kΩ, 470PF à la broche 1 de CN3, puis connecter un oscilloscope ou un voltmètre CA.	Disque test PLAY	(X25-2660-00) VR3 de gain de mise su point.	50mVrms doivent être obtenus. *C'est un dixième de la tension d'entrée. (Quand l'oscilloscope est utilisé, vérifier l'élément 1kHz uniquement.)	(d)
6	GAIN D'ALIGNEMENT	(X25-2660-00) Envoyer un signal de 1kHz, 0,5Vrms à la broche 4 de CN3.	(X25-2660-00) Connecter un LPF de 47kΩ, 470PF à la broche 5 puis connecter un oscilloscope ou un voltmètre CA.	Disque test PLAY	(X25-2660-00) VR4 de gain d'alignement.	50mVrms doivent être obtenus. *C'est un dixième de la tension d'entrée.(Quand l'oscilloscope est utilisé, vérifier l'élément 1kHz uniquement.)	(d)
7	ANGLE CORRECTEUR RF	–	(X25-2660-00) Raccorder l'oscilloscope ou le voltmètre CC à TP8(RF).	Disque test PLAY	(X25-2660-00) VR5 d'angle correcteur RF.	CC=1,0±0,1V	(e)
8	PLL	–	(X25-2660-00) Raccorder la compteur de fréquence à TP15(PLCK).	STOP	(X25-2660-00) L1 F.ADJ	Régler la fréquence de manière à ce que 4,23MHz soient obtenus.	(f)
9	HAUTEUR DE COUPLEUR	–	–	STOP	Vis d'ajustement de la hauteur de coupleur électronique.	Se référer à la section de l'ajustement de la hauteur de coupleur électronique.	

REGLAGE DE LA HAUTEUR DU BRAS DE FIXATION (D10-1525-22)

Comme montré dans la figure, régler la came de réglage de hauteur de manière à ce que le bras de fixation ne soit pas en contact avec l'attache, qu'un disque soit en place ou non.

(Tourner la came de réglage dans le sens des aiguilles d'une montre fait descendre le bras de fixation.)



REGLAGE

FONCTIONNEMENT DU MODE DE TEST

Cette fonction est prévue pour adjuster/vérifier les circuits de contrôle d'asservissement du système optique avec efficacité.

Quand un disque est lu normalement, tous les circuits de contrôle d'asservissement (circuits de mise au point, d'alignement, d'alimentation et de contrôle d'asservissement CLV) fonctionnent comme suit:

Le circuit d'asservissement de la mise au point contrôle la lentille de l'objectif incroporée dans l'actuateur du capteur dans la direction verticale, de manière à ce que la mise au point du rayon laser soit dirigée sur la surface de piste de signal du disque.

Le circuit d'asservissement de la mise au point contrôle l'inclinaison de la lentille de l'objectif incorporée dans l'actuateur du capteur dans la méthode trois points de manière à ce que le rayon laser trace la ligne de piste du signal sur la surface du disque.

Le circuit d'asservissement de l'alimentation fonctionne pour déplacer le capteur quand les régulations du mécanisme d'ajustement de l'alignement excèdent la transition fixée. Le mouvement du capteur est contrôlé de manière à ce que le rayon laser trace toujours la piste de signal dans la gamme de régulation de contrôle de l'asservissement de l'alignement.

Le circuit d'asservissement CLV échantillonne les éléments de signal d'horloge à partir du signal EFM et assure que la vitesse de rotation du moteur du disque est maintenue à la vitesse linéaire fixée.

Le résultat du fonctionnement du contrôle de l'asservissement de l'alignment est que le retard de la mise au point du rayon laser a été nouvellement réalisé. Ce retard de mise au point est aussi compensé par les circuits de contrôle de l'asservissement de la mise au point.

Quand les régulations de l'asservissement de l'alignement sont aumentées, le circuit d'asservissement d'alimentation commence à fonctionner et résulte en fonctionnement de l'alignement/mise au point à nouveau.

Comme décrit ci-dessus, les fonctionnements de tous les circuits de contrôle de système optique sont reliés les uns aux autres.

Lors de l'activation de la fonction de mode de test, seuls les circuits de contrôle d'asservissement partiels sont activés et les fonctions spéciales sont engagées. Régler les conditions spéciales en utilisant les touches de commandes du panneau avant comme indiqué dans le tableau ci-dessous.

Court-circuiter TP18 et TP19 de l'ensemble audio (X25-2660-00) et fournir l'alimentation (ON); le lecteur de compact disc entre en mode de test.

Pour relâcher ce mode, ouvrir le tiroir du disque en pressant la touche d'ouverture/fermeture (OPEN/CLOSE).

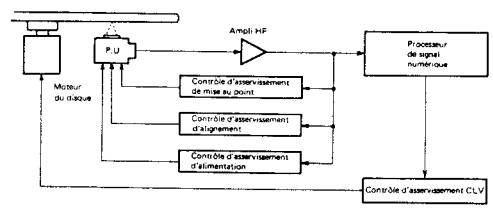


Tableau : Fonctionnement du mode de test

	Mode de test nom	Fonctionnement	Etat de chaque commande					Fonctionnement des touches
			Mise au point	Alignement	Alimentation	Moteur du disque	LD marche/arrêt	
1	Mise au point MARCHE	Pour mettre en marche l'asservissement de mise au point	Fonctionnant	Arrêt	Arrêt	Fonctionnant	Marche	Mise en entrée [M-READ]
2	Alignement MARCHE	Pour mettre en marche l'asservissement d'alignement.	Fonctionnant	Fonctionnant	Arrêt	Fonctionnant	Marche	Mise en entrée [MEMORY]
3	Alimentation MARCHE	Pour mettre en marche l'asservissement d'alimentation	Fonctionnant	Fonctionnant	Fonctionnant	Fonctionnant	Marche	Mise en entrée [PLAY/PAUSE]
4	ARRET	Pour mettre à l'arrêt la mise au point, et l'alimentation.	Arrêt	Arrêt	Arrêt		Arrêt	Mise en entrée [STOP]

	Mode de test nom	Etat d'ARRET	Etat MARCHE ALIMENTATION	Fonctionnement des touches
5	HAUT	Pour déplacer le capteur en direction avant pendant 100ms.	Pour passer 3 pistes en direction avant.	Mise en entrée [▶▶|]
6	BAS	Pour déplacer le capteur en direction arrière pendant 100ms.	Pour passer 3 pistes en direction arrière.	Mise en entrée [|◀◀]

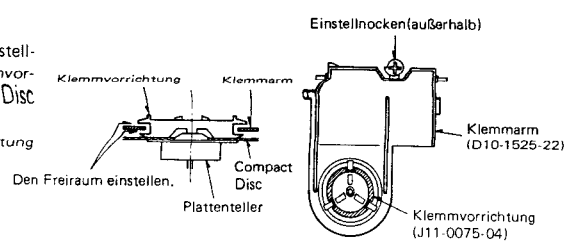
	Mode de test nom	Fonctionnement	Fonctionnement des touches
7	OUVERT/ FERMER	Pour OUVRIR/FERMER le tiroir. Retâche le MODE DE TEST et effectue le MODE NORMAL.	Mise en entrée [OPEN CLOSE]

ABGLEICH

NR.	GEGENSTAND	EINGANGS-EINSTELLUNG	AUSGANGS-EINSTELLUNG	SPIELER-EINSTELLUNG	ABGLEICH-PUNKTE	ABGLEICHEN FÜR	ABB.
1	LASERLEISTUNG	–	Den Sensor des optischen Leistungsmessers an die Abnehmerlinse setzen.	(X25-2660-00) TP16 und 17 kurzschließen.	(X29-1700-00) (A/2) VR1 Der VR des ALPC Schaltkreises, an Abnehmer installiert.	0,3mW	
2	PRÜFUNG DES LASER-BETRIEBSSTROMS (nur wenn der Aufnehmer Störungen zu haben scheint)	–	(X25-2660-00) CN2 Stift 3 entfernen und den Gleichstrom-Meter anschließen.	(X29-1600-00) TP17 und 18 kurzschließen.	–	Stromwert, auf dem Laserabnehmer aufgedruckt: +5,5mA (Ein Abnehmer, der den obigen Wert um mehr als 40mA überschreitet, ist defekt.)	(a)
3	FOKUSSIER-FEHLER-BALANCE	–	(X25-2660-00) Ein Oszilloskop an TP8(RF) anschließen.	Testplatte PLAY	(X25-2660-00) Fokusfehler-balance VR2	Bestes Augenmuster	(b)
4	SPURHALTE-FEHLER-BALANCE	–	(X25-2660-00) Ein Oszilloskop oder einen Tester an TP11(TE) anschließen.	Im Prüfmodus die M-READ-Taste drücken, so daß der Spurhalteservo ausgeschaltet ist.	(X25-2660-00) Spurhaltefehler-balance VR1	Die obere und untere Seite müssen symetrisch sein. Oder Gleichstrom 0±0,05V muß erhalten werden.	(c)
5	ERNEUT FOKUSSIEREN	(X25-2660-00) Ein 1kHz, 0,5Vrms Signal an CN3 Stift 2 anlegen.	(X25-2660-00) Einen 47kΩ, 470PF Tiefpaßfilter an CN3 Stift 1 anschließen und dann ein Oszilloskop oder einen Wechselstrom-Voltmeter anschließen.	Testplatte PLAY	(X25-2660-00) Fokusverstäekung VR3	50mVrms müssen erhalten werden. *Es ist ein Zehntel der Eingangsspannung. (Wenn der Oszilloskop verwendet wird, nur die 1kHz Komponente überprüfen.)	(d)
6	SPURHALTE-VERSTÄRKUNG	(X25-2660-00) Ein 1kHz, 0,5Vrms Signal an CN3 Stift 4 anlegen.	(X25-2660-00) Einen 47kΩ, 470PF Tiefpaßfilter an CN3 Stift 1 anschließen und dann ein Oszilloskop oder einen Wechselstrom-Voltmeter anschließen.	Testplatte PLAY	(X25-2660-00) Spurhalte-verstärkung VR4	50mVrms müssen erhalten werden. *Es ist ein Zehntel der Eingangsspannung. (Wenn der Oszilloskop verwendet wird, nur die 1kHz Komponente überprüfen.)	(d)
7	RF-VERSATZ (WINKEL)	–	(X25-2660-00) Ein Oszilloskop oder einen Gleichstrom-Voltmeter an TP8(RF) anschließen.	Testplatte PLAY	(X25-2660-00) RF-Versatz VR5	DC=1,0±0,1V	(e)
8	PLL	–	(X25-2660-00) Einen Frequenzzähler an TP15(PLCK) anschließen.	STOP	(X25-2660-00) L1 F.ADJ	Die Frequenz so einstellen, daß 4,23MHz erhalten wird.	(f)
9	BEFESTIGER-HÖHE	–	–	STOP	Halteglied-Höheneinstell-schraube	Siehe den Abschnitt für Einstellung der Halteglied-Höhe.	

ÖHENEINSTELLUNG DAS KLEMMARMS
010-1525-22)

Wie aus der Abbildung ersichtlich, den Höheneinstell-
ocken so einstellen, daß der Klemmarm die Klemmvor-
ntung nicht berührt, auch wenn eine Compact Disc
ngelegt ist.
(Durch Drehen des Einstellnockens in Uhrzeigerrichtung
rd der Klemmarm gesenkt.)



ABGLEICH

TESTMODUSBETRIEB

Diese Funktion dient zum Einstellen und Überprüfen der Servosteuerungeschaltkreise für das optische System.

Bie der normalen Wiedergabe einer Disc arbeiten alle Servosteuerungsschaltkreise (Fokussierung-, Spurhaltung-, Vorschub- und CLV-Servosteuerungsschaltkreise) wie folgt:

Der Fokussierung-Servoschaltkreis steuert die im Abnehmer-Betätiger eingabaute Linse in vertikaler Richtung, so daß der Laserstrahl auf die Signalspur-oberfläche der Disc fokussiert ist.

Der Spurhaltung-Servoschaltkreis steuert im Dreipunkt-Modus die Neigung der im Abnehmer-Betätiger eingebauten Linse, so daß der Laserstrahl die Signal-spur auf der Disc-Oberfläche verfolgt.

Der Vorschub-Servoschaltkreis bewegt den Abnehmer, wenn die Regulierungen der Spurhaltung-Einstellungmechanismen den festen Übergang überschreiten. Die Bewegung des Abnehmers ist so gesteuert, daß der Laser-strahl immer den Signalspur innerhalb des Spurhaltung-Servo-steuerungs-Bereiches verfolgt.

Der CLV-Servoschaltkreis tastet die Taktsignalkomponenten vom EFM-Signal ab und führt die Steuerung so durch, daß die Drehgeschwindigkeit des Discmotors auf der festen Lineargeschwindigkeit gehalten wird.

Als ein Resultat des Spurhaltung-Servosteuerungsbetriebes wurde die Fokusverzögerung des Laserstrahls verbessert. Außerdem wird die Fokusverzögerung durch die Fokussierung-Servosteuerungsschaltkreise kompensiert.

Wenn die Spurhaltung-Servoregulierung erhöht wird, arbeitet der Vorschub-Servoschaltkreis erneut, woraus ein neuer Spurhaltung/Fokussierung-Betrieb resultiert.

Aus der obigen Beschreibung geht hervor, daß die Operationen aller Steuerungsschaltkreise des optischen Systems zueinander in Beziehung stehen.

Wenn die Testmodus-Funktion aktiviert wird, arbeiten nur partielle Servosteuerungsschaltkreise, und spezielle Operationen werden aktiviert. Die spezielle Bedingung mit den Bedientasten an der Frontplatte einstellen, siehe die Tabelle unten.

TP18 and TP19 der Audio-Einheit (X25-2660-00) kurzschließen und die Spannungsversorgung einschalten, dann schaltet der CD-Spieler in den Testmodus-Betrieb.

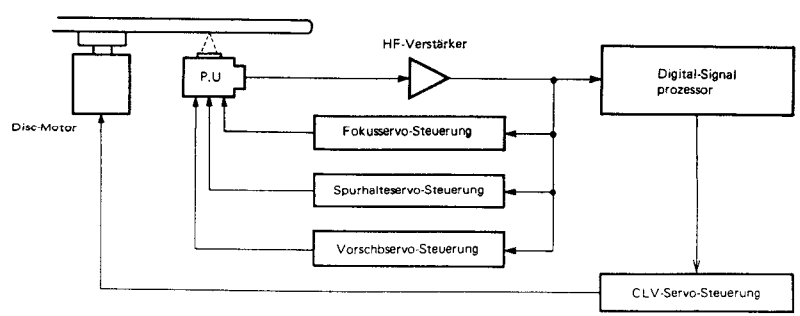
Zum Ausschalten dieser Betriebsart den Disc-Einschub durch brüaken der OPEN/CLOSE-Taste öffnen.

Tabelle : Testmodusbetrieb

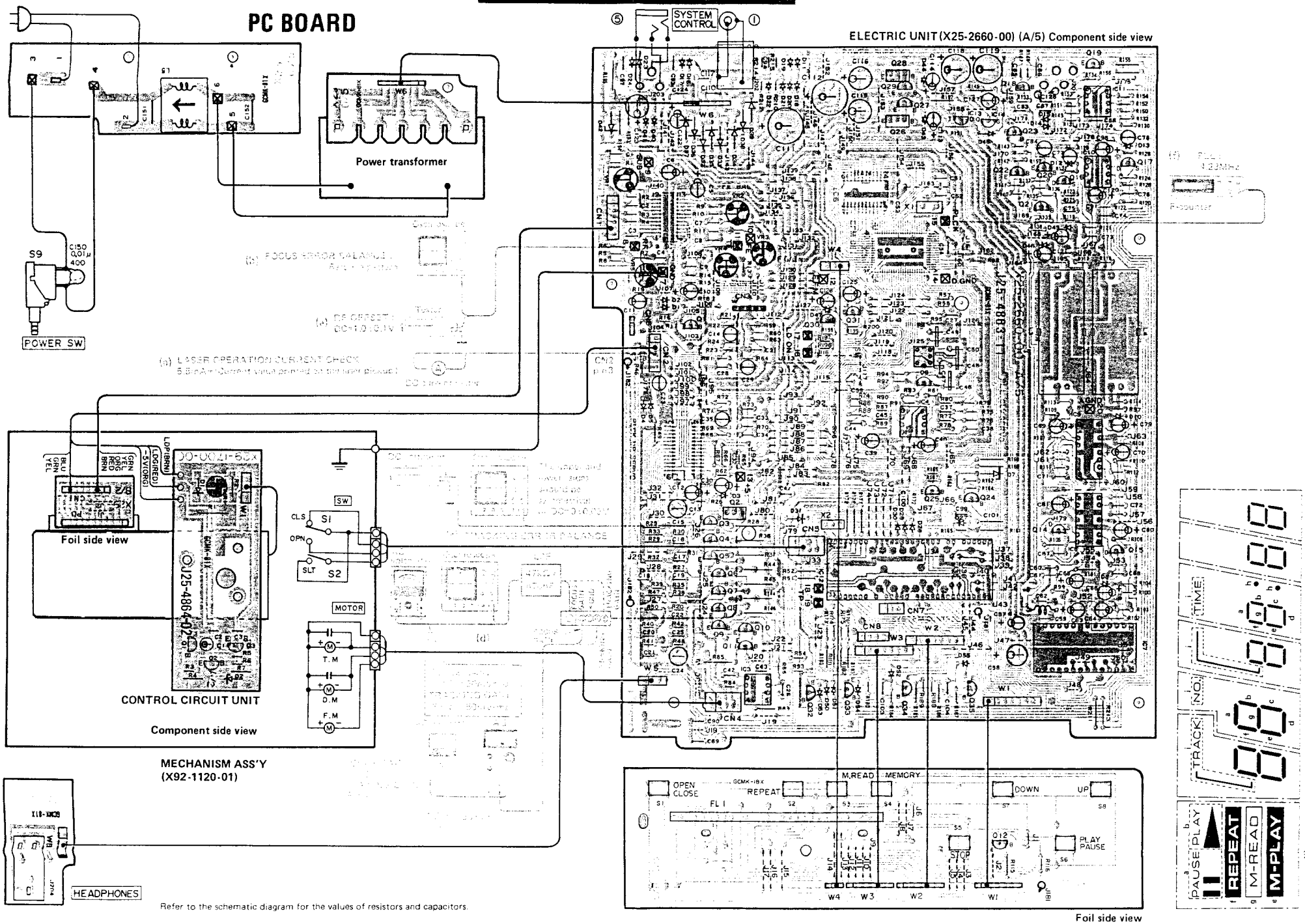
	Test-Betriebsart Bezeichnung	Betrieb	Steuerungszustand					Tastenbetätigung
			Fokus-sierung	Spurhal-tung	Vorschub	Disc-Motor	LD ein/aus	
1	Fokussierung ein	Zum Einschalten des Fokusservo.	in Betrieb	aus	aus	in Betrieb	ein	Eingabe [M-READ]
2	Spurhaltung ein	Zum Einschalten des Spurhalteservo.	in Betrieb	in Betrieb	aus	in Betrieb	ein	Eingabe [M-READ]
3	Vorschub ein	Zum Einschalten des Vorschubservo	in Betrieb	in Betrieb	in Betrieb	in Betrieb	ein	Eingabe [PLAY/PAUSE]
4	STOP	Zum Ausschalten von Fokussierung, Spurhaltung und Vorschub.	aus	aus	aus		aus	Eingabe [STOP]

	Test-Betriebsart Bezeichnung	im Stop-Zustand	im Vorschub-Ein-Zustand	Tastenbetätigung
5	aufwärts	Zum Vorwärtsbewegen des PU für 100ms.	Zum Überspringen von 3 Spuren in Vorwärtsrichtung.	Eingabe [→]
6	abwärts	Zum Rückwärtsbewegen des PU für 100ms.	Zum Überspringen von 3 Spuren in Rückwärtsrichtung.	Eingabe [←]

	Test-Betriebsart Bezeichnung	Betrieb	Tastenbetätigung
7	Öffnen/Schließen	Zum Öffnen/Schließen des Disc-Trägers Die Test-Betriebsart ausschalten und die normale Betriebsart einschalten.	Eingabe [OPEN/CLOSE]



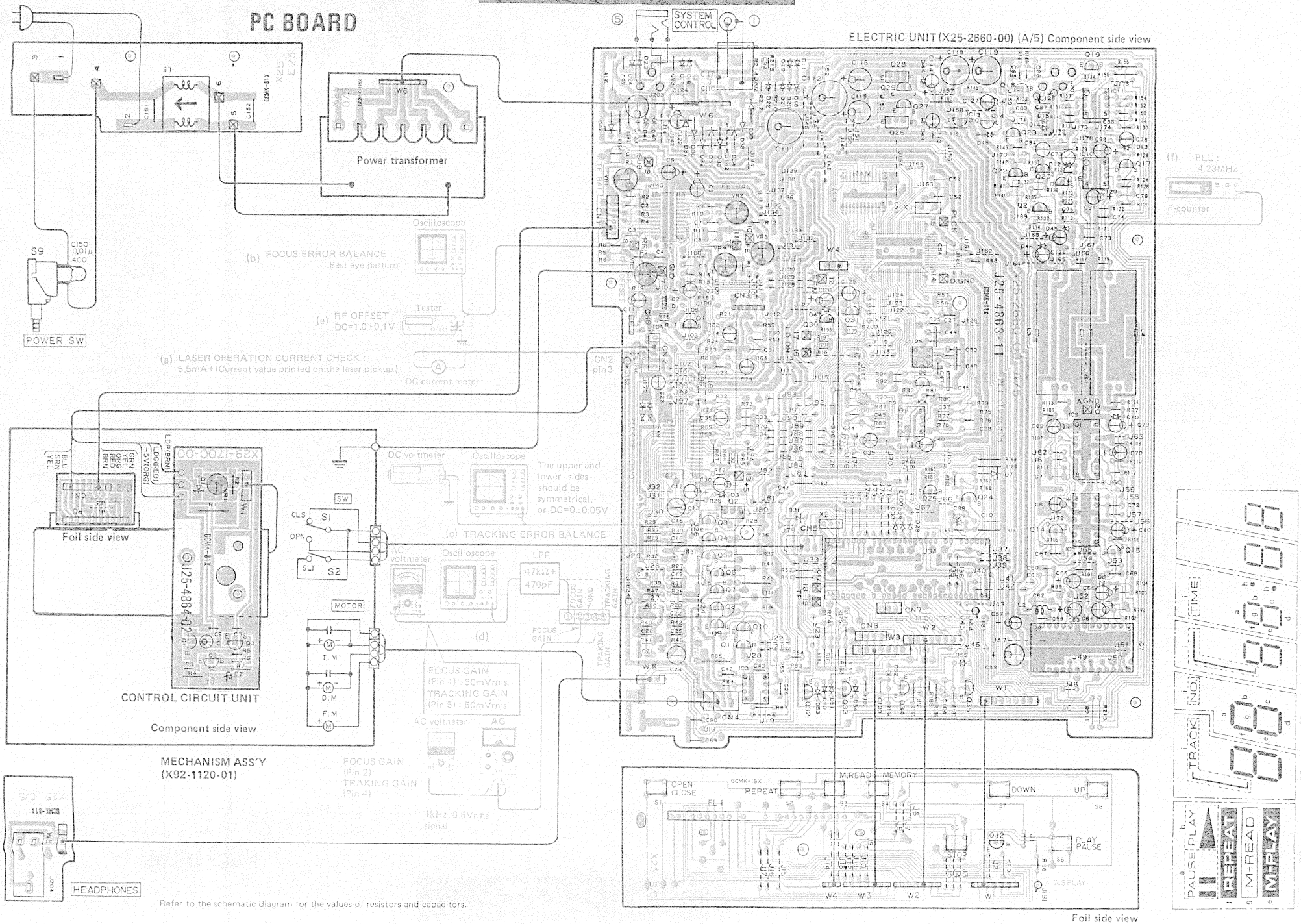
PC BOARD



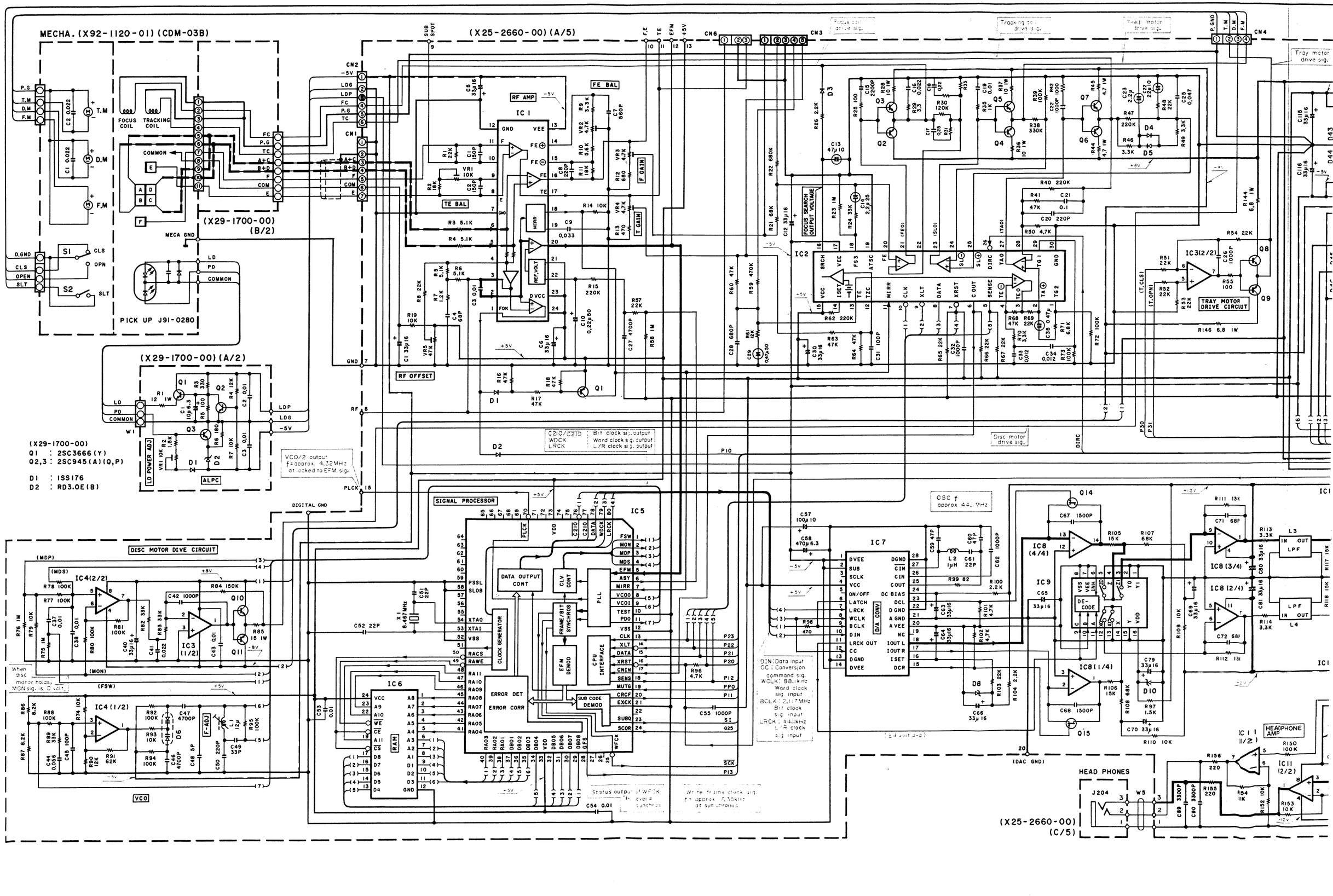
Refer to the schematic diagram for the values of resistors and capacitors.

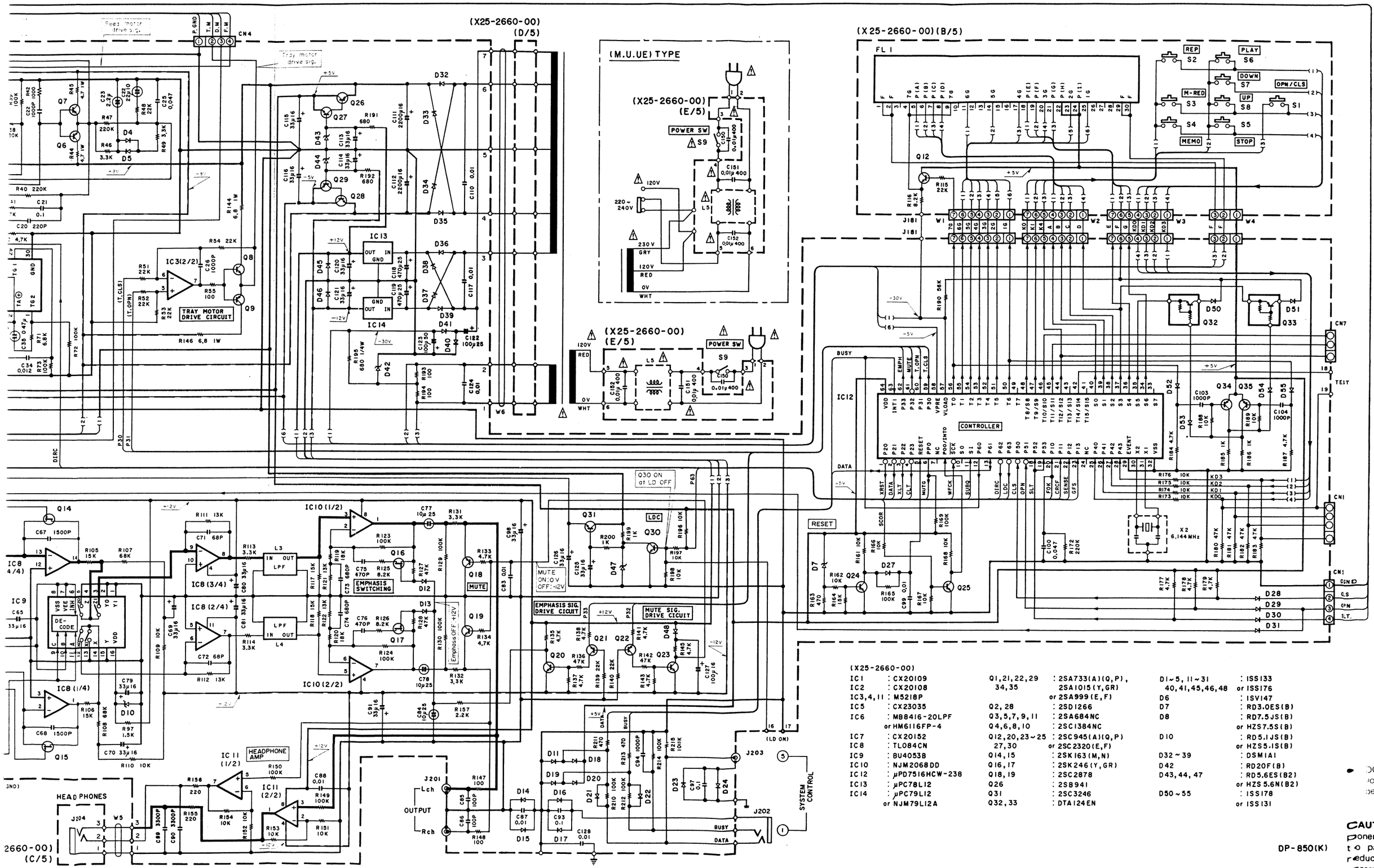
DP-850 DP-850

PC BOARD



Refer to the schematic diagram for the values of resistors and capacitors.


MECHA. (X92-1120-01) (CDM-03B)
(X25-2660-00) (A/5)
(X29-1700-00) (B/2)
(X29-1700-00) (A/2)
(X29-1700-00)
Q1 : 2SC3666(Y)
Q2,3 : 2SC945(A)(Q,P)
D1 : ISS176
D2 : RD3.0E(B)
PICK UP J91-0280
FOCUS COIL
TRACKING COIL
COMMON
MECA GND
DIGITAL GND
RF AMP
RF OFFSET
FE BAL
TE BAL
F GAIN
T GAIN
IC1
IC2
IC3(1/2)
IC4(1/2)
IC4(2/2)
IC5
IC6
IC7
IC8(4/4)
IC8(3/4)
IC8(2/4)
IC8(1/4)
IC9
IC11(1/2)
IC11(2/2)
IC3(2/2)
SIGNAL PROCESSOR
DISC MOTOR DIVE CIRCUIT
VCO
ALPC
LD POWER ADJ
TRAY MOTOR DRIVE CIRCUIT
HEADPHONE AMP
HEAD PHONES
FOCUS SEARCH OUTPUT VOLTAGE
DATA OUTPUT CONT
CLV CONT
PLL
FRAME/BIT SYNCHROS
CLOCK GENERATOR
EFM DEMOD
CPU INTERFACE
SUB CODE DEMOD
ERROR DET
ERROR CORR
DE-CODE
D/A CONV
OSC f approx 44. MHz
VCO/2 output f= approx. 4.32MHz at locked to EFM sig.
C2IO/C2TO : Bit clock sig. output
WDCK : Word clock s g. output
LRCK : L/R clock si g. output
Status output of WFCK "H" : every 1 synchronous
Write frame clock sig. f= approx. 7.35kHz at synchronous
DIN: Data input
CC: Conversion command sig.
WCLK: 88.1kHz Word clock sig. input
BCLK: 2.117MHz Bit clock sig. input
LRCK: 44.1kHz L/R clock sig. input
Focus coil drive sig.
Tracking coil drive sig.
Sled motor drive sig.
Tray motor drive sig.
Disc motor drive sig.
When disc motor holds, MON sig. is 0 volt.
(MDP)
(MDS)
(MON)
(FSW)
(T.CLS)
(T.OPN)
(DAC GND)
SUB SPOT
F.E
TE
EFM
+5V
-5V
+8V
-8V
+12V
-12V
P.G
T.M
D.M
F.M
D.GND
CLS
OPEN
SLT
S1
S2
CN1
CN2
CN3
CN4
CN6
W1
P10
P11
P12
P13
P20
P21
P22
P23
P30
P31
SCK
SI
Q25
PPO



(X25-2660-00)

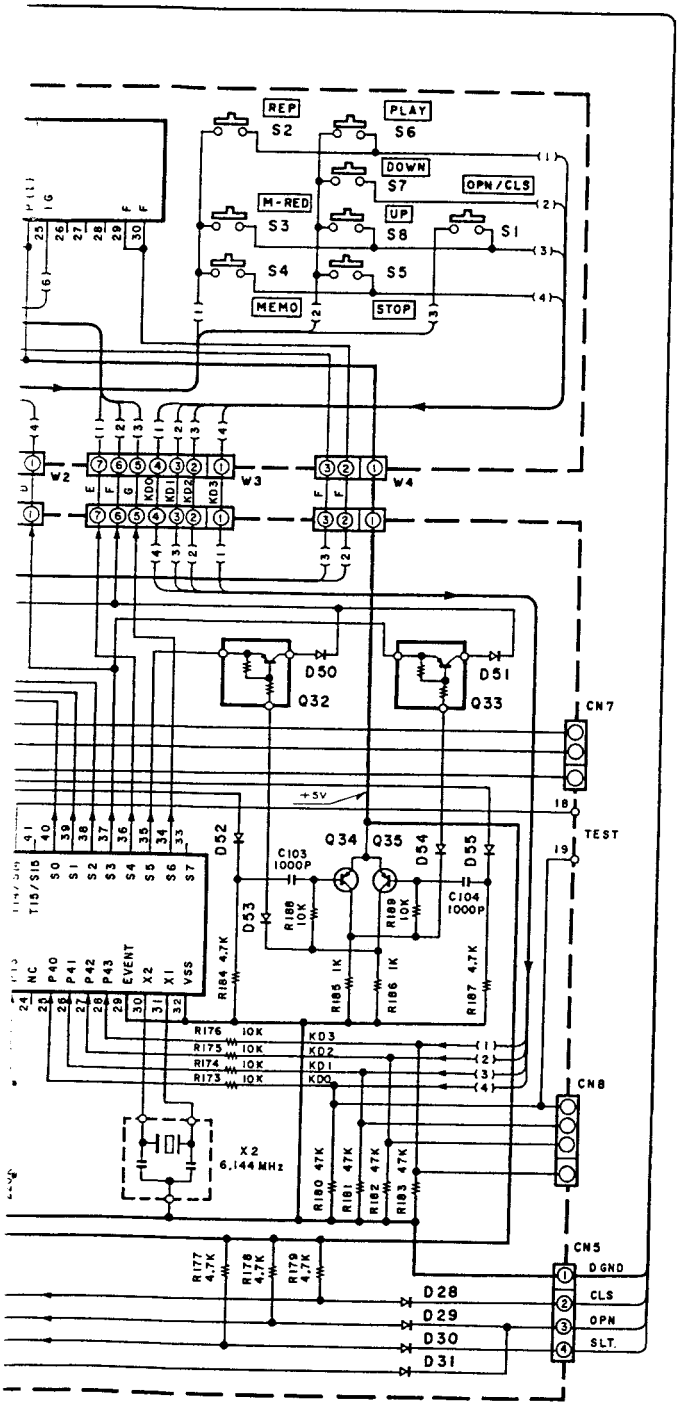
IC1	: CX20109	Q1,21,22,29 34,35	: 2SA733(A)(Q,P), 2SA1015(Y,GR) or 2SA999(E,F)	D1~5, 11~31 40,41,45,46,48	: ISS133 or ISS176
IC2	: CX20108			D6	: ISV147
IC3,4,11	: M5218P	Q2, 28	: 2SD1266	D7	: RD3.0ES(B)
IC5	: CX23035	Q3,5,7,9,11	: 2SA684NC	D8	: RD7.5JS(B)
IC6	: MB8416-20LPF or HM6116FP-4	Q4,6,8,10	: 2SC1384NC		or HZS7.5S(B)
IC7	: CX20152	Q12,20,23~25 27,30	: 2SC945(A)(Q,P) or 2SC2320(E,F)	D10	: RD5.1JS(B) or HZS5.1S(B)
IC8	: TL084CN	Q14,15	: 2SK163(M,N)	D32~39	: DSM1A1
IC9	: BU4053B	Q16,17	: 2SK246(Y,GR)	D42	: RD20F(B)
IC10	: NJM2068DD	Q18,19	: 2SC2878	D43,44,47	: RD5.6ES(B2) or HZS5.6N(B2)
IC12	: μPD7516HCW-238	Q26	: 2SB941	D50~55	: ISS178 or ISS131
IC13	: μPC78L12	Q31	: 2SC3246		
IC14	: μPC79L12 or NJM79L12A	Q32,33	: DTA124EN		

- DC voltages are voltmeter. Valu between individ

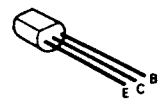
CAUTION: For co ponents only with t o parts list). ⚠ I reduce the risk of e measurements shal bly insulated from returned to the cus

DP-850(K)

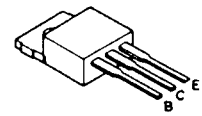
2SA1015
2SA684N
2SA733
2SA999
2SC1384
2SB941
NJM2068
M5218P
NJM79L12A
μPC79L12
HM6116FP
24
CX20108



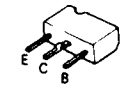
2SA1015 2SC2320
2SA684NC 2SC2878
2SA733 2SC3246
2SA999 2SC945
2SC1384NC



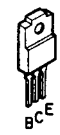
2SD1266



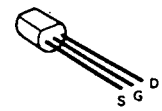
2SC2021F
2SC3666



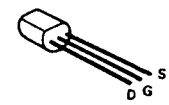
2SB941



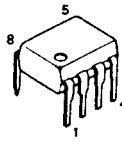
2SK125
2SK246



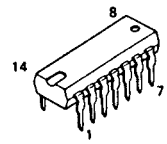
2SK163



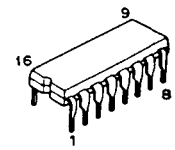
NJM2068D-D



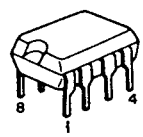
TL084CN



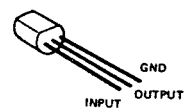
BU4053B
μPD4053BC



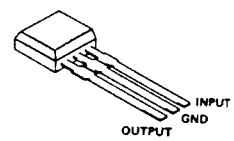
M5218P



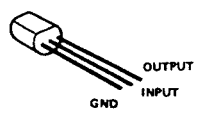
DTA124EN



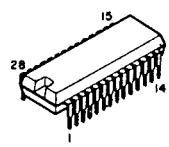
μPC78L12



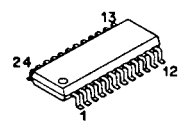
NJM79L12A
μPC79L12



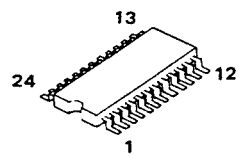
CX20152



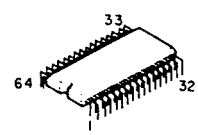
CX20109
MB416-20LPF



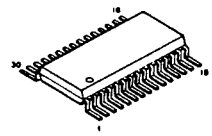
HM6116FP-4



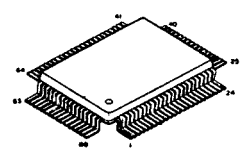
μPD7516HCW-238



CX20108



CX23035



33(A)(Q,P),	D1~5, 11~31	: ISS133
015(Y,GR)	40,41,45,46,48	or ISS176
99(E,F)	D6	: ISV147
266	D7	: RD3.0ES(B)
84NC	D8	: RD7.5JS(B)
384NC		or HZS7.5S(B)
45(A)(Q,P)	D10	: RD5.1JS(B)
320(E,F)		or HZS5.1S(B)
63(M,N)	D32~39	: DSM1A1
46(Y,GR)	D42	: RD20F(B)
878	D43,44,47	: RD5.6ES(B2)
941		or HZS5.6N(B2)
246	D50~55	: ISS178
24EN		or ISS131

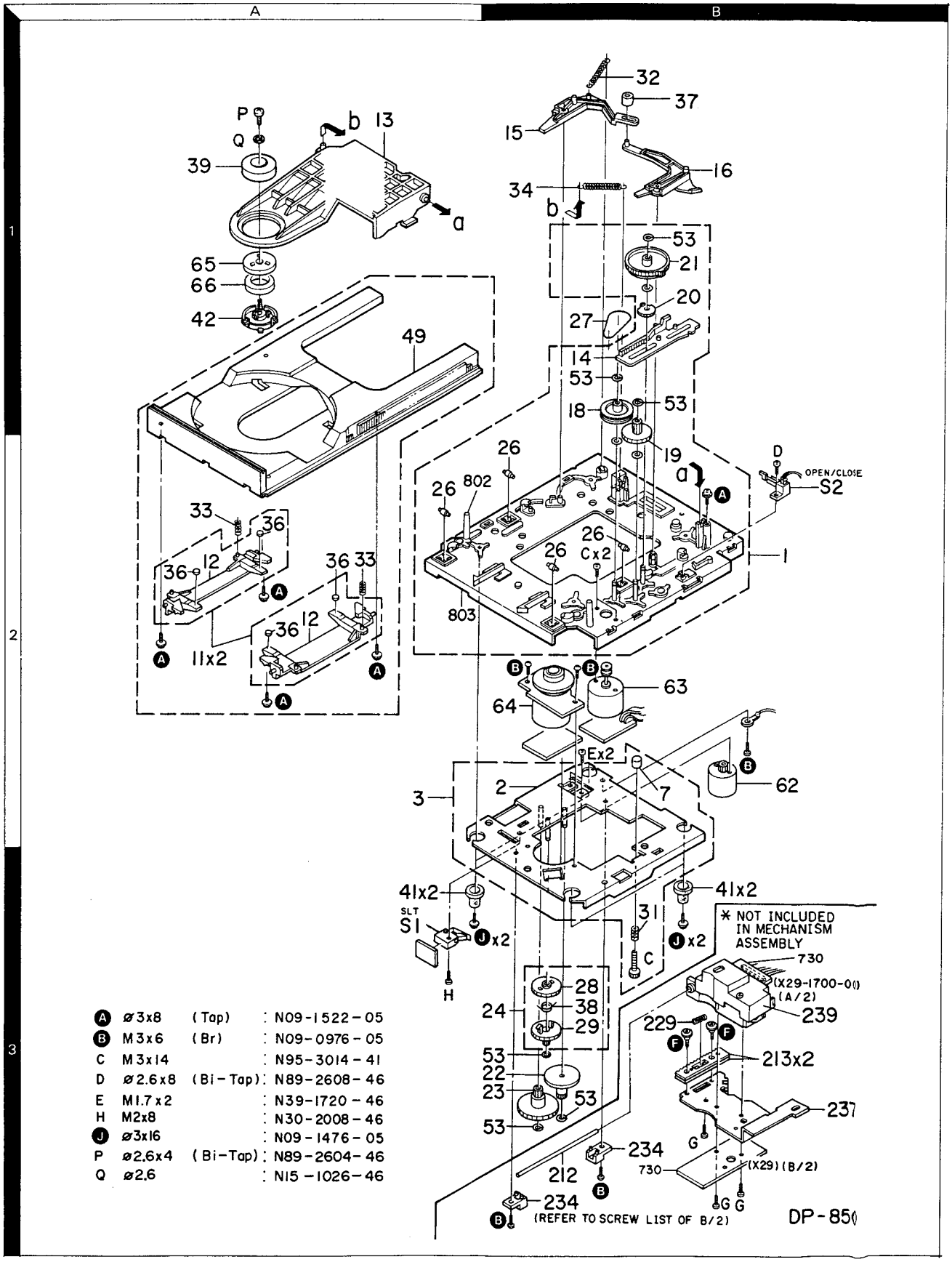
- DC voltages are as measured with a high impedance voltmeter. Values may vary slightly due to variations between individual instruments or/and units.

CAUTION: For continued safety, replace safety critical components only with manufacturer's recommended parts (refer to parts list). ΔIndicates safety critical components. To reduce the risk of electric shock, leakage-current or resistance measurements shall be carried out (exposed parts are acceptably insulated from the supply circuit) before the appliance is returned to the customer.

DP-850(K)

DP-850
KENWOOD

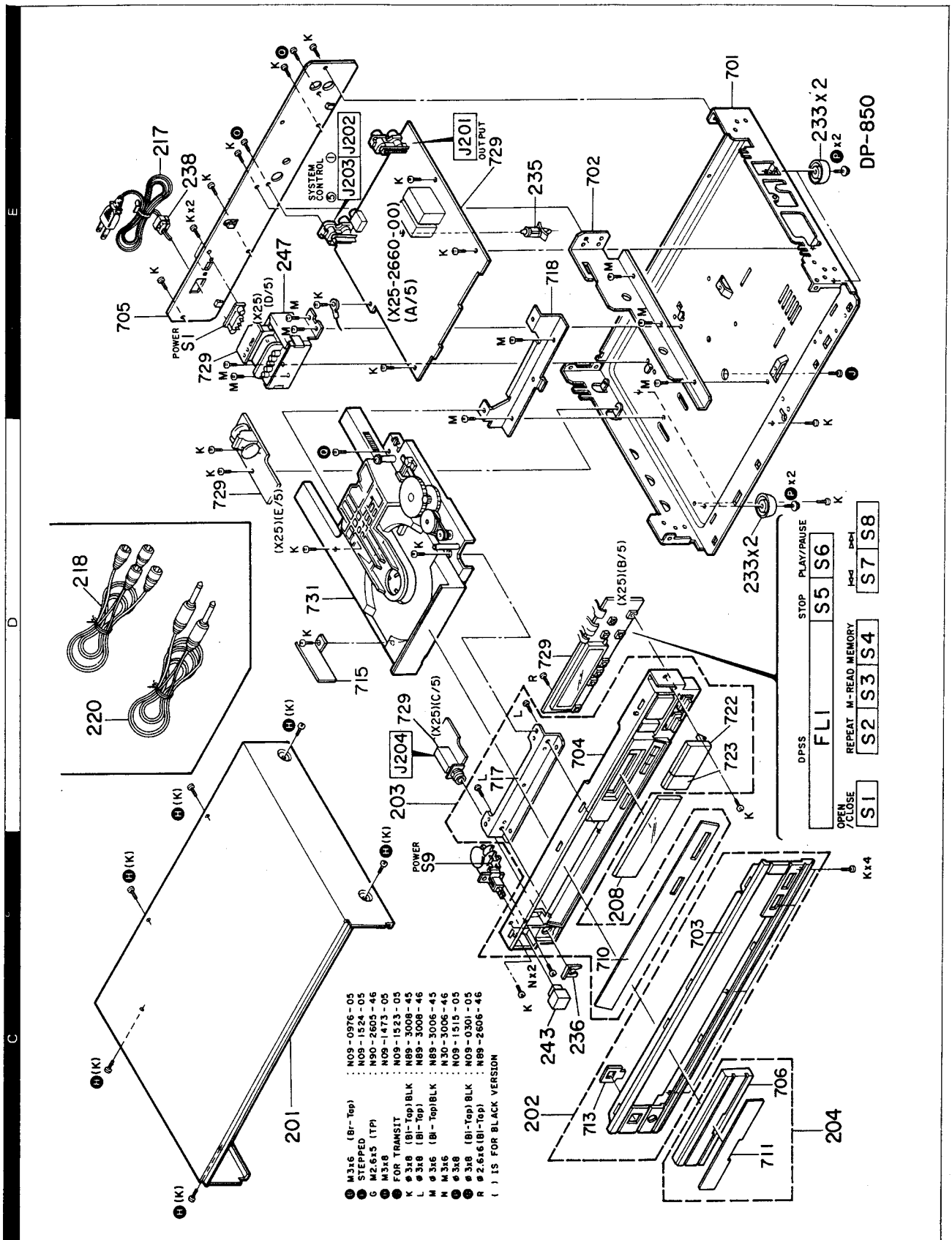
EXPLODED VIEW(MECHANISM)



A	ø3x8	(Tap)	: N09-1522-05
B	M3x6	(Br)	: N09-0976-05
C	M3x14		: N95-3014-41
D	ø2.6x8	(Bi-Tap)	: N89-2608-46
E	M1.7x2		: N39-1720-46
H	M2x8		: N30-2008-46
J	ø3x16		: N09-1476-05
P	ø2.6x4	(Bi-Tap)	: N89-2604-46
Q	ø2.6		: N15-1026-46

Parts with the exploded numbers larger than 700 are not supplied.

EXPLODED VIEW(UNIT)



Parts with the exploded numbers larger than 700 are not supplied.

PARTS LIST

* New Parts
Parts without Parts No. are not supplied.
Les articles non mentionnes dans le Parts No. ne sont pas fournis.
Teile ohne Parts No. werden nicht geliefert.

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名/規格	Destination 仕向	Remarks 備考
			DP-850			
201	1C	*	A01-1477-01	METALLIC CABINET	KP1U1	B
201	1C	*	A01-1477-01	METALLIC CABINET	M1UE1	B
201	1C	*	A01-1477-01	METALLIC CABINET	X1T1E1	B
201	1C	*	A01-1477-01	METALLIC CABINET	A1	B
201	1C	*	A01-1478-01	METALLIC CABINET	M2E2	S
202	2C	*	A20-4815-03	PANEL ASSY	KP1U1	B
202	2C	*	A20-4815-03	PANEL ASSY	M1UE1	B
202	2C	*	A20-4815-03	PANEL ASSY	X1E1A1	B
202	2C	*	A20-4816-03	PANEL ASSY	T1	B
202	2C	*	A20-4817-03	PANEL ASSY	M2E2	S
203	1D	*	A22-0570-03	SUB PANEL ASSY	KP1U1	B
203	1D	*	A22-0570-03	SUB PANEL ASSY	M1UE1	B
203	1D	*	A22-0570-03	SUB PANEL ASSY	X1T1E1	B
203	1D	*	A22-0570-03	SUB PANEL ASSY	A1	B
203	1D	*	A22-0571-03	SUB PANEL ASSY	M2E2	S
204	2C	*	A29-0076-04	PANEL ASSY (TRAY)	M2E2	S
204	2C	*	A29-0077-04	PANEL ASSY (TRAY)	KP1U1	B
204	2C	*	A29-0077-04	PANEL ASSY (TRAY)	M1UE1	B
204	2C	*	A29-0077-04	PANEL ASSY (TRAY)	X1T1E1	B
204	2C	*	A29-0077-04	PANEL ASSY (TRAY)	A1	B
208	2C	*	B10-0825-04	FRONT GLASS		
-			B46-0092-03	WARRANTY CARD	K	
-			B46-0094-03	WARRANTY CARD	U1UE1	
-			B46-0095-03	WARRANTY CARD	U1UE1	
-			B46-0096-13	WARRANTY CARD	X1	
-			B46-0121-03	WARRANTY CARD	P1	
-			B46-0122-13	WARRANTY CARD	E1E2	
-			B46-0123-03	WARRANTY CARD	T1	
-		*	B50-6276-00	INSTRUCTION MANUAL(ENGLISH)	KP1U1	
-		*	B50-6276-00	INSTRUCTION MANUAL(ENGLISH)	M1UE1	
-		*	B50-6276-00	INSTRUCTION MANUAL(ENGLISH)	X1E1M2	
-		*	B50-6276-00	INSTRUCTION MANUAL(ENGLISH)	E2A1	
-		*	B50-6277-00	INSTRUCTION MANUAL(FRENCH)	P1M1X1	
-		*	B50-6277-00	INSTRUCTION MANUAL(FRENCH)	E1M2E2	
-		*	B50-6277-00	INSTRUCTION MANUAL(FRENCH)	A1	
-		*	B50-6278-00	INSTRUCTION MANUAL(SPANISH)	M1M2A1	
-		*	B50-6279-00	INSTRUCTION MANUAL(ENGLISH)	T1	
-		*	B50-6280-00	INSTRUCTION MANUAL(G,D,I)	E1E2	
-		*	B50-6341-00	INSTRUCTION MANUAL(ARABIC)	M1M2A1	
-			B58-0223-04	CAUTION CARD (PRE-SET 120V)	U1	
-			B58-0269-04	CAUTION CARD	K	
-			B58-0350-04	CAUTION CARD		
-			B58-0351-04	CAUTION CARD		
-			B58-0513-04	CAUTION CARD (PRESET220-240)	UE1	
-			B59-0092-00	SERVICE DIRECTORY	U1UE1	
⚠ C150			C91-0023-05	CERAMIC 0.01UF AC250V	U1M1	
⚠ C150			C91-0023-05	CERAMIC 0.01UF AC250V	UE1M2	
⚠ C150			C91-0647-05	CERAMIC 0.01UF P	KP1X1	
⚠ C150			C91-0647-05	CERAMIC 0.01UF P	T1E1E2	
⚠ C150			C91-0647-05	CERAMIC 0.01UF P	A1	
212	3B		D10-1529-04	ROD		
213	3B		D13-0308-14	GEAR		

E: Scandinavia & Europe H: Audio Club K: USA P: Canada W: Europe
A: Saudi Arabia T: England U: PX(Far East, Hawaii)
UE: AAFES(Europe) X: Australia M: Other Areas

Remarks: S: SILVER B: BLACK

⚠ indicates safety critical components.

* New Parts
Parts without Parts No. are not supplied.
Les articles non mentionnes dans le Parts No. ne sont pas fournis.
Teile ohne Parts No. werden nicht geliefert.

PARTS LIST

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名/規格	Destination 仕向	Remarks 備考
⚠ 217	1E		E30-0181-05	AC POWER CORD	KP1	
⚠ 217	1E		E30-0459-05	AC POWER CORD	E1E2A1	
⚠ 217	1E		E30-0812-05	AC POWER CORD	U1M1	
⚠ 217	1E		E30-0812-05	AC POWER CORD	UE1M2	
⚠ 217	1E		E30-1341-05	AC POWER CORD	X1	
217	1E		E30-1416-05	AC POWER CORD	T1	
218	1D		E30-0505-05	AUDIO CORD		
220	1D		E30-1392-05	CORD WITH PLUG		
229	3B		G01-1733-04	COMPRESSION SPRING		
-		*	H01-7104-04	ITEM CARTON CASE	KP1U1	
-		*	H01-7104-04	ITEM CARTON CASE	M1UE1	
-		*	H01-7104-04	ITEM CARTON CASE	X1E1A1	
-		*	H01-7105-04	ITEM CARTON CASE	T1	
-		*	H01-7155-04	ITEM CARTON CASE	M2E2	
-		*	H10-1874-02	POLYSTYRENE FOAMED FIXTURE		
-			H20-0417-04	PROTECTION COVER(460X370X360)	M1M2A1	
-			H25-0224-04	PROTECTION BAG (800X400)	KP1U1	
-			H25-0224-04	PROTECTION BAG (800X400)	UE1X1	
-			H25-0224-04	PROTECTION BAG (800X400)	T1E1E2	
-			H25-0232-04	PROTECTION BAG (235X350)		
233	2D,2E		J02-0128-04	FOOT		
234	3B		J19-2153-04	HOLDER (ROD)		
235	2E		J19-2598-05	HOLDER		
236	2C		J21-3326-05	JACK MOUNTING HARDWARE		
237	3B		J21-3828-04	MOUNTING HARDWARE		
⚠ 238	1E		J42-0083-05	POWER CORD BUSHING		
239	3B		J91-0280-15	PICKUP		
-			J61-0307-05	WIRE BAND		
243	2C		K29-1446-04	KNOB ASSY(BUTTON) POWER	M2E2	S
243	2C		K29-2001-04	KNOB ASSY(BUTTON) POWER	KP1U1	B
243	2C		K29-2001-04	KNOB ASSY(BUTTON) POWER	M1UE1	B
243	2C		K29-2001-04	KNOB ASSY(BUTTON) POWER	X1T1E1	B
243	2C		K29-2001-04	KNOB ASSY(BUTTON) POWER	A1	B
⚠ 247	1E	*	L01-7021-05	POWER TRANSFORMER	KP1	
⚠ 247	1E	*	L01-7022-05	POWER TRANSFORMER	X1T1E1	
⚠ 247	1E	*	L01-7022-05	POWER TRANSFORMER	E2	
⚠ 247	1E	*	L01-7024-05	POWER TRANSFORMER	U1M1	
⚠ 247	1E	*	L01-7024-05	POWER TRANSFORMER	UE1M2	
247	1E	*	L01-7024-05	POWER TRANSFORMER	A1	
B	3B		N09-0976-05	TAPTITE SCREW (M3X6)		
F	3B		N09-1524-05	STEPPED SCREW		
H	1C,1D		N09-1473-05	TAPPING SCREW (M3X8)	M2E2	S
J	2E		N09-1523-05	SET SCREW		
P	2D,2E		N09-1515-05	TAPPING SCREW (Ø3X8)		
Q	1D,1E		N09-0301-05	TAPTITE SCREW (Ø3X8)		
⚠ S1	1E		S31-2083-05	SLIDE SWITCH (POWER TYPE)	U1M1	
⚠ S1	1E		S31-2083-05	SLIDE SWITCH (POWER TYPE)	UE1M2	
⚠ S1	1E		S31-2083-05	SLIDE SWITCH (POWER TYPE)	A1	
⚠ S9	1C		S40-1066-05	PUSH SWITCH (POWER TYPE)		
			ELECTRIC UNIT(X25-2660-00)			
C1 ,2			CC45FSL1H151J	CERAMIC 150PF J		

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Remarks: S: SILVER B: BLACK

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C3			CK45FF1H103Z	CERAMIC	0.010UF Z		
C4			CC45FSL1H680J	CERAMIC	68PF J		
C5 ,6			CE04KW1C330M	ELECTRO	33UF 16WV		
C7			CK45FB1H561K	CERAMIC	560PF K		
C8			CC45FSL1H221J	CERAMIC	220PF J		
C9			CF92FV1H333J	MF	0.033UF J		
C10			CE04KW1HR22M	ELECTRO	0.22UF 50WV		
C11 ,12			CE04KW1C330M	ELECTRO	33UF 16WV		
C13		*	C90-1334-05	ELECTRO	47UF 10WV		
C14			C90-1350-05	ALMINIUM ELECTROLYTIC C.			
C15			CK45FB1H222K	CERAMIC	2200PF K		
C16			CK45FF1H223Z	CERAMIC	0.022UF Z		
C17			CF92FV1H274J	MF	0.27UF J		
C18			CF92FV1H224J	MF	0.22UF J		
C19			CK45FF1H103Z	CERAMIC	0.010UF Z		
C20			CC45FSL1H221J	CERAMIC	220PF J		
C21			CF92FV1H104J	MF	0.10UF J		
C22			CK45FB1H102K	CERAMIC	1000PF K		
C23			C90-1350-05	ALMINIUM ELECTROLYTIC C.			
C24			C90-1333-05	NP-ELEC	10UF 25WV		
C25			CF92FV1H473J	MF	0.047UF J		
C26			CK45FB1H102K	CERAMIC	1000PF K		
C27			CK45FF1H472Z	CERAMIC	4700PF Z		
C28			CK45FB1H681K	CERAMIC	680PF K		
C29			C90-1331-05	ALMINIUM ELECTROLYTIC C.			
C30			CE04KW1C330M	ELECTRO	33UF 16WV		
C31			CC45FSL1H101J	CERAMIC	100PF J		
C32			CK45FB1H102K	CERAMIC	1000PF K		
C33 ,34			CF92FV1H123J	MF	0.012UF J		
C35			C90-1331-05	ALMINIUM ELECTROLYTIC C.			
C37 ,38			CK45FF1H103Z	CERAMIC	0.010UF Z		
C39 ,40			CE04KW1C330M	ELECTRO	33UF 16WV		
C41			CK45FF1H223Z	CERAMIC	0.022UF Z		
C42			CK45FB1H102K	CERAMIC	1000PF K		
C43			CK45FF1H103Z	CERAMIC	0.010UF Z		
C44			CF92FV1H563J	MF	0.056UF J		
C45			CC45FSL1H101J	CERAMIC	100PF J		
C46 ,47			CK45FF1H472Z	CERAMIC	4700PF Z		
C48			CC45FCH1H050C	CERAMIC	5.0PF C		
C49			CC45FCH1H330J	CERAMIC	33PF J		
C50			CC45FSL1H221J	CERAMIC	220PF J		
C51 ,52			CC45FCH1H220J	CERAMIC	22PF J		
C53 ,54			CK45FF1H103Z	CERAMIC	0.010UF Z		
C55			CK45FB1H102K	CERAMIC	1000PF K		
C57			CE04KW1A101M	ELECTRO	100UF 10WV		
C58			CE04KW0J471M	ELECTRO	470UF 6.3WV		
C59 ,60			C91-0737-05	CERAMIC	47PF J		
C61			C91-0729-05	CERAMIC	22PF J		
C62			C91-0757-05	CERAMIC	0.001UF K		
C63 -66			CE04KW1C330M	ELECTRO	33UF 16WV		
C67 ,68			CQ93HP2A152J	MYLAR	1500PF J		
C69 ,70			CE04KW1C330M	ELECTRO	33UF 16WV		
C71 ,72			C91-0176-05	POLYSTY	68PF K		
C73 ,74			CK45FB1H680K	CERAMIC	680PF K		
C75 ,76			CQ09FS1H471JZS	POLYSTY	470PF J		

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C77 ,78			C90-1332-05	ELECTRO 10UF 25WV		
C79 -81			CE04KW1C330M	ELECTRO 33UF 16WV		
C83			CK45FF1H103Z	CERAMIC 0.010UF Z		
C84			C90-1332-05	ELECTRO 10UF 25WV		
C85 ,86			CC45FSL1H101J	CERAMIC 100PF J		
C87 ,88			CK45FF1H103Z	CERAMIC 0.010UF Z		
C89 ,90			CK45FB1H332K	CERAMIC 3300PF K		
C91			CE04KW1C330M	ELECTRO 33UF 16WV		
C93			C91-0700-05	CERAMIC 0.1UF J		
C94			C91-0757-05	CERAMIC 0.001UF K		
C97			C91-0700-05	CERAMIC 0.1UF J		
C98			CE04KW1C330M	ELECTRO 33UF 16WV		
C99			CK45FF1H103Z	CERAMIC 0.010UF Z		
C100			CK45FF1H473Z	CERAMIC 0.047UF Z		
C101			C91-0769-05	CERAMIC 0.01UF M		
C103,104			CK45FB1H102K	CERAMIC 1000PF K		
C110			CK45FF1H103Z	CERAMIC 0.010UF Z		
C111,112			CE04KW1C222M	ELECTRO 2200UF 16WV		
C113-116			CE04KW1C330M	ELECTRO 33UF 16WV		
C117			CK45FF1H103Z	CERAMIC 0.010UF Z		
C118,119			CE04KW1E471M	ELECTRO 470UF 25WV		
C120,121			CE04KW1C330M	ELECTRO 33UF 16WV		
C122			CE04KW1E101M	ELECTRO 100UF 25WV		
C123			CE04KW1H101M	ELECTRO 100UF 50WV		
C124			CK45FF1H103Z	CERAMIC 0.010UF Z		
C125,126			CE04KW1C330M	ELECTRO 33UF 16WV		
C127			CE04KW1C101M	ELECTRO 100UF 16WV		
C128			C91-0769-05	CERAMIC 0.01UF M		
⚠ C151,152			C91-0647-05	CERAMIC 0.01UF P		
J201	1E		E13-0235-05	PHONO JACK (2P)OUTPUT		
J202	1E		E11-0164-05	MINIATURE PHONE JACK(3P)TO AMP		
J203	1E		E13-0126-05	PHONO JACK (1P)TO RECEIVER		
J204	1D		E11-0127-05	PHONE JACK (3P)		
L1		*	L32-0328-15	OSCILATING COIL		
L2			L40-1092-14	SMALL FIXED INDUCTOR(1.0UH,M)		
L3 ,4		*	L79-0721-05	LC FILTER		
⚠ L5			L79-0702-05	LINE FILTER		
⚠ L5		*	L79-0723-05	LINE FILTER		
X1			L78-0211-05	RESONATOR (8.4672MHZ)		
X2			L78-0212-05	RESONATOR (6.1447MHZ)		
R28			RS14DB3A100J	FL-PROOF RS 10 J 1W		
R36 ,37			RS14DB3A100J	FL-PROOF RS 10 J 1W		
R44 ,45			RS14DB3A4R7J	FL-PROOF RS 4.7 J 1W		
R85			RS14DB3A150J	FL-PROOF RS 15 J 1W		
R144		*	RS14DB3A6R8J	FL-PROOF RS 6.8 J 1W		
R146		*	RS14DB3A6R8J	FL-PROOF RS 6.8 J 1W		
VR1			R12-3096-05	TRIM POT.(10K) TE BAL		
VR2 -4			R12-1069-05	TRIM POT.(4.7K)FE BAL,F/T GAIN		
VR5			R12-3099-05	TRIM POT.(47K) RF OFFSET		
S1 -8	2D		S40-1064-05	PUSH SWITCH		
D1 -5			1SS133	DIODE		
D1 -5			1SS176	DIODE		
D6			1SV147	VARISTOR		

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D7		*	RD3.0ES(B)	ZENER DIODE		
D8		*	HZS7.5S(B2)	ZENER DIODE		
D8			RD7.5JS(B)	ZENER DIODE		
D10		*	HZS5.1S(B2)	ZENER DIODE		
D10			RD5.1JS(B)	ZENER DIODE		
D11 -24			1SS133	DIODE		
D11 -24			1SS176	DIODE		
D27 -30			1SS133	DIODE		
D27 -30			1SS176	DIODE		
D31			1SS133	DIODE		
D31			1SS176	DIODE		
D32 -39			DSM1A1	DIODE		
D40 ,41			1SS133	DIODE		
D40 ,41			1SS176	DIODE		
D42			RD20F(B)	ZENER DIODE		
D43 ,44		*	HZS5.6N(B2)	ZENER DIODE		
D43 ,44		*	RD5.6ES(B2)	ZENER DIODE		
D45 ,46			1SS133	DIODE		
D45 ,46			1SS176	DIODE		
D47		*	HZS5.6N(B2)	ZENER DIODE		
D47		*	RD5.6ES(B2)	ZENER DIODE		
D48			1SS133	DIODE		
D48			1SS176	DIODE		
D50 -55			1SS131	DIODE		
D50 -55			1SS178	DIODE		
FL1	2D	*	FIP7BM13	FLUORESCENT INDICATOR TUBE		
IC1			CX-20109	IC(RF AMP FOR 3-BEAM PICK-UP)		
IC2			CX20108	IC(CD SERVO)		
IC3 ,4			M5218P	IC(OP AMP X2)		
IC5			CX23035	IC(DIGITAL SIGNAL PROCESSOR)		
IC6			HM6116FP-4	IC(16K RAM)		
IC6			MB8416-20LPF	IC(16K RAM(CMOS))		
IC7			CX20152	IC(16-BIT D/A CONVERTER)		
IC8			TL084CN	IC(OP AMP X4)		
IC9		*	BU4053B	IC(3-INPUT 2CH MPX/DE-MPX)		
IC9			UPD4053BC	IC(3-INPUT 2CH MPX/DE-MPX)		
IC10			NJM2068D-D	IC(OP AMP X2)		
IC11			M5218P	IC(OP AMP X2)		
IC12		*	UPD7516HCW-238	IC(MICROPROCESSOR)		
IC13			UPC78L12	IC(VOLTAGE REGULATOR/ +12V)		
IC14			NJM79L12A	IC(VOLTAGE REGULATOR/ -12V)		
IC14		*	UPC79L12	IC(VOLTAGE REGULATOR/ -12V)		
Q1			2SA1015(Y,GR)	TRANSISTOR		
Q1			2SA733(A)(Q,P)	TRANSISTOR		
Q1			2SA999(E,F)	TRANSISTOR		
Q2			2SD1266	TRANSISTOR		
Q3		*	2SA684NC	TRANSISTOR		
Q4			2SC1384NC	TRANSISTOR		
Q5		*	2SA684NC	TRANSISTOR		
Q6			2SC1384NC	TRANSISTOR		
Q7		*	2SA684NC	TRANSISTOR		
Q8			2SC1384NC	TRANSISTOR		
Q9		*	2SA684NC	TRANSISTOR		
Q10			2SC1384NC	TRANSISTOR		
Q11		*	2SA684NC	TRANSISTOR		

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Q12			2SC2320(E,F)	TRANSISTOR		
Q12			2SC945(A)(Q,P)	TRANSISTOR		
Q14 ,15			2SK125	FET		
Q14 ,15			2SK163(M,N)	FET		
Q16 ,17			2SK246(Y,GR)	FET		
Q18 ,19			2SC2878	TRANSISTOR		
Q20			2SC2320(E,F)	TRANSISTOR		
Q20			2SC945(A)(Q,P)	TRANSISTOR		
Q21 ,22			2SA1015(Y,GR)	TRANSISTOR		
Q21 ,22			2SA733(A)(Q,P)	TRANSISTOR		
Q21 ,22			2SA999(E,F)	TRANSISTOR		
Q23 -25			2SC2320(E,F)	TRANSISTOR		
Q23 -25			2SC945(A)(Q,P)	TRANSISTOR		
Q26			2SB941	TRANSISTOR		
Q27			2SC2320(E,F)	TRANSISTOR		
Q27			2SC945(A)(Q,P)	TRANSISTOR		
Q28			2SD1266	TRANSISTOR		
Q29			2SA1015(Y,GR)	TRANSISTOR		
Q29			2SA733(A)(Q,P)	TRANSISTOR		
Q29			2SA999(E,F)	TRANSISTOR		
Q30			2SC2320(E,F)	TRANSISTOR		
Q30			2SC945(A)(Q,P)	TRANSISTOR		
Q31			2SC3246	TRANSISTOR		
Q32 ,33			DTA124EN	DIGITAL TRANSISTOR		
Q34 ,35			2SA1015(Y,GR)	TRANSISTOR		
Q34 ,35			2SA733(A)(Q,P)	TRANSISTOR		
Q34 ,35			2SA999(E,F)	TRANSISTOR		
CONTROL CIRCUIT UNIT (X29-1700-00)						
C1			CE04JW0J100M	ELECTRO 10UF 6.3WV		
C2 ,3			C91-0769-05	CERAMIC 0.01UF M		
R1			RS14KB3A120J	FL-PROOF RS 12 J 1W		
VR1			R12-3096-05	TRIMMING POT. (10K)LD POWER ADJ		
D1			1SS176	DIODE		
D2		*	RD3.0ES(B)	ZENER DIODE		
Q1			2SC3666	TRANSISTOR		
Q2 ,3			2SC2021F(R,S)	TRANSISTOR		
MECHANISM ASS'Y (X92-1120-01)						
1	2B	*	A10-0868-22	CHASSIS ASSY		
2	2A	*	A11-0172-03	SUB CHASSIS ASSY		
7	2B		B09-0044-04	CAP		
C1 ,2			C91-0769-05	CERAMIC 0.01UF M		
3	2A	*	D40-0372-02	DRIVE MECHANISM ASSY		
11	2A	*	D10-1523-04	ARM ASSY		
12	2A	*	D10-1524-03	ARM		
13	1A	*	D10-1525-22	ARM (CAMPER)		
14	1B	*	D10-1526-03	SLIDER		
15	1B	*	D10-1527-03	ARM (LOCK,L)		
16	1B	*	D10-1528-03	ARM (LOCK,R)		
18	1B	*	D13-0298-04	GEAR		
20	1B	*	D13-0300-14	GEAR		

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21	1B	*	D13-0301-03	GEAR (MAIN)		
22	3B	*	D13-0303-04	GEAR		
24	3B	*	D13-0304-04	GEAR		
24	3B	*	D13-0307-04	GEAR ASSY		
26	2A,2B	*	D14-0144-04	ROLLER		
27	1B	*	D16-0124-04	BELT		
28	3B	*	D13-0305-04	GEAR		
29	3B	*	D13-0306-04	GEAR		
31	3B		G01-0675-04	TORSION COIL SPRING		
32	1B	*	G01-1727-04	EXTENSION SPRING (ARM)		
33	2A	*	G01-1728-04	COMPRESSION SPRING(TRAY)		
34	1B	*	G01-1729-04	EXTENSION SPRING		
36	2A	*	G13-0180-04	CUSHION (ARM ASSY)		
37	1B	*	G13-0189-04	CUSHION (Ø2XØ4X3.5)		
38	3B	*	G01-1732-04	TORSION COIL SPRING		
39	1A	*	G13-0193-04	CUSHION		
41	3A,3B	*	J02-0167-15	INSULATOR		
42	1A	*	J11-0075-04	CLAMPER		
49	1A	*	J99-0028-01	TRAY		
-			J61-0307-05	WIRE BAND		
53	1B,3B		N19-0366-04	FLAT WASHER		
A	2A,2B	*	N09-1522-05	SET SCREW (Ø3X8)		
B	2B		N09-0976-05	TAPTITE SCREW (M3X6)		
J	3B		N09-1476-05	MACHINE SCREW (Ø3X16)		
S1	3A	*	S33-1019-05	LEVER SWITCH (SLT)		
S2	2B	*	S46-1067-05	LEAF SWITCH (OPN/CLS)		
62	2B	*	T42-0079-04	MOTOR ASSY		
63	2B	*	T42-0081-05	DC MOTOR (TRAY)		
64	2B	*	T42-0083-04	MOTOR ASSY (DISC)		
65	1A	*	T50-1030-04	YOKE		
66	1A		T99-0222-05	MAGNET		

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SPECIFICATIONS

Number of channels	2 channels
Frequency response	5 Hz — 20 kHz, ±1 dB
Dynamic range	92 dB or more
Total harmonic distortion	0.004% at 1 kHz
Channel separation	90 dB at 1 kHz
Wow & flutter	Unmeasurable limit
Line output level/impedance	1.6 V/3.4 ohms
Headphones output level/impedance	31 mW/32 ohms
Playing time	MAX 74 min/side
Diameter of the disc	120 mm (4-23/32")
Constant linear velocity	1.2 - 1.4 m/sec.
Quantization	16 bits linear 1 channel
Sampling frequency	44.1 kHz
Channel modulation code	EFM (eight to fourteen modulation)
Pick up type	Optical pick up
Laser type	Semiconductor laser
Power requirements	120 V, 60Hz...USA & Canada models, 220 V, 50 Hz...European models 240 V, 50 Hz...Australia and U.K. models 110 — 120 V/220 — 240 V, 50/60 Hz (Switchable)...Other countries
Power consumptions	15 W...USA & Canada modeles 15 W...Other Countries
Dimentions	W 420 mm (16-9/16") H 74 mm (2-15/16") D 311 mm (12-1/4")
Weight	4.4 kg (9.7 lb)

Note:
We follow a policy of advancements in development. For this reason specifications may be changed without notice.

Note :

Component and circuitry are subject to modification to insure best operation under differing local conditions. This manual is based on, the U.S.A. (K) standard, and provides information on regional circuit modification through use of alternate schematic diagrams, and information on regional component variations through use of parts list.

TRIO-KENWOOD CORPORATION
Shionogi Shibuya Building, 17-5, 2-chome Shibuya, Shibuya-ku, Tokyo 150, Japan

KENWOOD ELECTRONICS
DIVISION OF KENWOOD U.S.A. CORPORATION
1315 E. Watsoncenter Rd., Carson, California 90745, U.S.A.
75 Seaview Drive, Secaucus, New Jersey 07094, U.S.A.

TRIO-KENWOOD CANADA INC.
1070 Jayson Court, Mississauga, Ontario, Canada L4W 2V5

TRIO-KENWOOD ELECTRONICS, N.V.
Leuvensesteenweg 504 B-1930 Zaventem, Belgium

TRIO-KENWOOD ELECTRONICS GmbH
Rembrücker Str. 15, 6056 Heusenstamm, West Germany

TRIO-KENWOOD FRANCE S.A.
5, Boulevard Ney, 75018 Paris, France

TRIO-KENWOOD (AUSTRALIA) PTY. LTD. (INCORPORATED IN N.S.W.)
4E Woodcock Place, Lane Cove, N.S.W. 2066, Australia

KENWOOD & LEE ELECTRONICS, LTD.
Wang Kee Building, 5th Floor, 34-37, Connaught Road, Central, Hong Kong